

Full Length Research Paper

What do place-based crime prevention strategies mean for the Turkish planning system and urban transformation?

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According to place-based crime theories, the distribution of crime incidents in a city is related to how different areas of a city are developed; and consequently, by developing an understanding of the relationship between the distribution of crime and the urban structure, the potential for crime prevention through urban planning and design may be increased. This paper aims to explore this relationship in a case study area, and looks into new ecology theories such as Defensible Space, *CPTED* and Crime Pattern in relation to the Turkish planning system and the ongoing urban transformations from a critical perspective. For this purpose, the spatial and temporal distributions of place-related crime incidents against people and property in a one-year period were studied in a particular police station zone, that of Etlik, Ankara, which contains planned, squatter and in-transition settlements. In parallel to place-based theories, general properties of crime incidents displayed a clustering in space and time; and were concentrated primarily in planned areas. The paper concludes with an elaboration of the problems in the Turkish planning system and urban transformation programs that have been implemented in Ankara and other cities, and proposes concrete strategies for the place-based prevention of crimes in the planning system.

Key words: Planning/designing out crime, place-based crime theories, new ecology of crime, Turkish planning system, urban transformation in Turkey.

INTRODUCTION

Today, crime and the fear of crime have become a normal part of urban life that not only affects economic and social sustainability but also limits people in their choice of space and time for all activities, such as dwelling, working, eating, education, shopping and leisure. Crime is multi-faceted, having social, economic, cultural, behavioral, spatial and temporal aspects.

There is a broad range of measures, methods, samples and data, settings and controls characterizing the dozens of theories related to the concept of crime, either in an etiological (that is, specific causes of criminal acts) or in an epidemiological (that is, factors of distribution of crime) context (Jensen, 2001b; Crews, 2001). "Structural" or "sociological" theories (Clinard and Meier, 1998 in Crews, 2001:143) explain the epidemiology of crime, emphasizing that it is related to certain social structural conditions of a society; while "processual" or "social psychological" theories are concerned with the etiology of

crime, and explain the process through which individuals come to commit such acts (Crews, 2001:143). The theoretical framework of crime exploration is summarized in Figure 1.

The hierarchical structure given in Figure 1 should be seen as a trial categorization for expressional simplicity to allow an understanding of the wide variety of crime-related perspectives. For example, in literature, there are no such explicit groupings as early new and late new crime ecological approaches, as they are rather referred to as one group under new ecological approaches. The distinction is made only in this section of this paper to provide clarity, to show the different ecological levels of resolutions and their slightly different emphases and to provide data on the different time periods in which distinct urbanization and urban development processes took place in their development, all of which will be explained later in this section. Moreover, the hierarchical structure

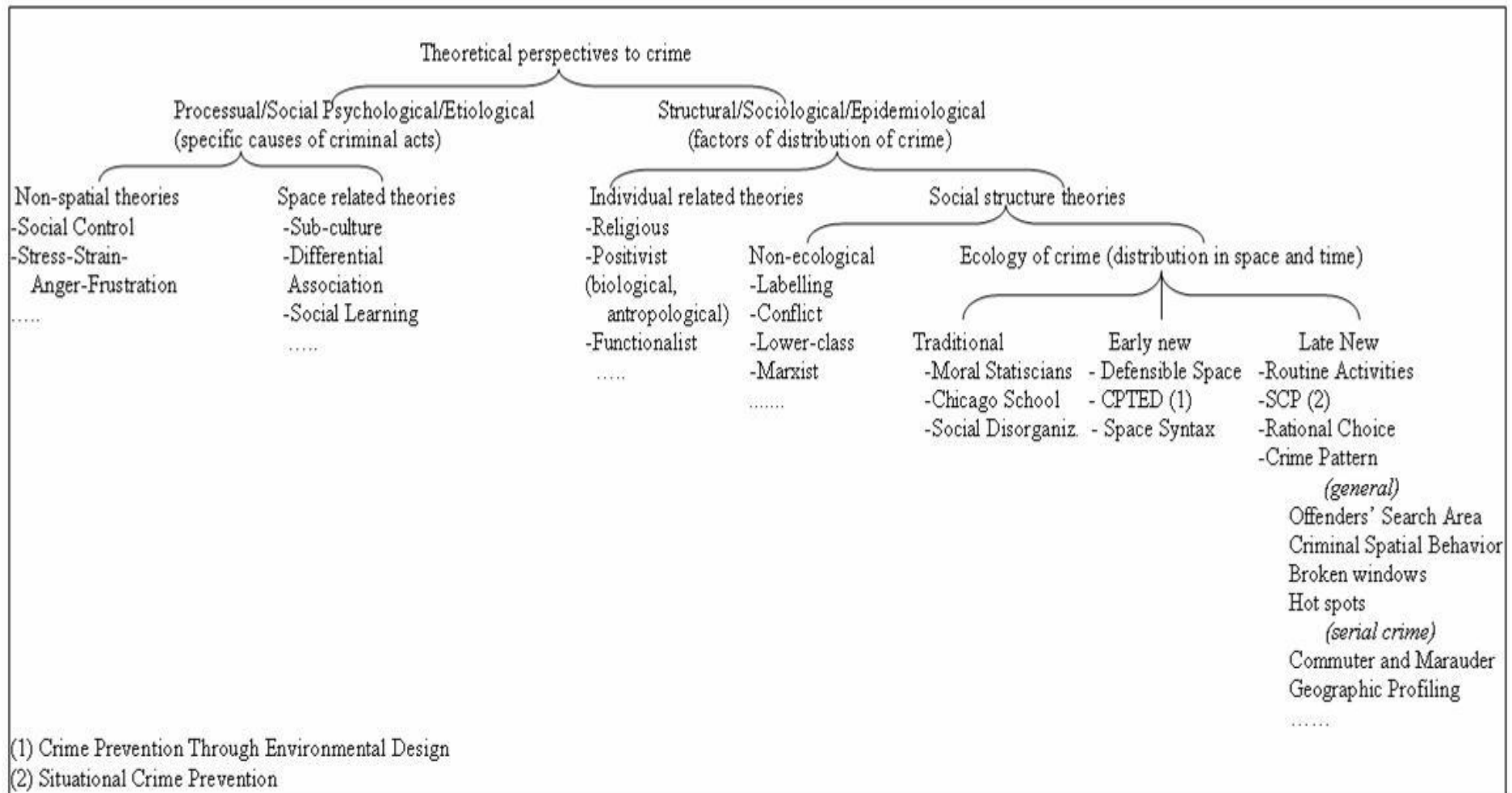


Figure 1. Theoretical framework for crime exploration. Source: Erdo an, 2007: 16 originally prepared summarizing information from Whitt, 2001; Jensen, 2001; Crews, 2001; Sutherland, 1940 in Wu, 2001; Henslin, 1999 in Crews, 2001, Oc and Tiesdell, 1997, Schneider and Kitchen, 2002; Ratcliffe, 2001; Alston, 1994; Stangeland, 2003.

Table 1. Spatial and social contexts and corresponding theories of crime ecology.

Urbanization and urban development processes in the West (Europe and North America) and related spatial and social contexts	Crime ecology theories
Late 18 th –Late 19 th century Industrial City Early 20 th century Modern City	Early Traditional Ecologists: Moral Statisticians Chicago School and Social Disorganization Theorists of Traditional Ecology
Mid-1940s–Early 1970s Modern(ist) City	Early New Ecology by Defensible Space, <i>Crime Prevention Through Environmental Design</i> , and Space Syntax Theorists
Late 1970s–Present Global(izing) City	Late New Ecology by Routine Activities, <i>Situational Crime Prevention</i> , Rational Choice, and Crime Pattern Theorists

Source: Erdo ank, 2007: 19.

given in Figure 1 also maintains a horizontal relationship between the theories, and their different combination or integrated use (Dunham and Wilson, 2001:189).

The section continues with the presentation of a general perspective for the development of social structure theories on the “ecology of crime” within different spatial and social contexts, and then focuses on the early and late new ecological theories, which are grouped under the heading of new theories in the rest of the paper.

The high variance and unequal distribution of criminal acts in space and time have long been recognized by social scientists (Glaeser et al, 1996:507). The field of science that searches for an understanding of the distribution of criminal acts in space and time is called “ecology of crime” (Crews, 2001:143). From an ecological perspective, Miethe (2001:203) states that “humans are similar to plants and other animals in those behavioral patterns occur in an ecological niche or context that establishes relationships, dependencies, and structures on the natural habitat.... The ecological perspective on crime attempts to identify those social and physical characteristics of geographical areas that enable and constrain the expression of criminal motivations”.

In crime ecology, both space and time have different levels of aggregation: “macro”, “mezo” and “micro” (Brantingham and Brantingham, 1998:264; Quimet, 2000) . Crime ecology studies generally utilize one of these levels of resolution, and on rare occasions, two levels at once. These levels are listed as follows:

“Macro” level implies inter -cities, inter- regions and national and international for *space*; and decades or centuries for time;

“Mezo” level implies intra-city areas and neighborhoods within a particular city for space; and a group of years, one year, months or days for time;

“Micro” level implies individual addresses and street blocks for space; and hours, minutes or seconds for time (Herbert, 1982 in Wu, 2001:1; Leitner, 1999:71; Wu, 2001:98; Nelson et al., 1996:413,418-419; Henry and Bryan, 2000:3,7-14).

All ecological theories were developed in Western countries, particularly by researchers from Europe, Britain and North America. The ecological theories of crime may be better comprehended when they are examined in the spatial and social contexts from which they emerged. In other words, these theories which were developed mainly in Europe and North American countries are intimately related to the respective urbanization and urban development processes that took place in these countries (Table 1).

Late 18th to 19th century, industrial cities were associated with the rise of early traditional ecologists, who are known as Moral Statisticians (e.g., Guerry, 1833; Quetelet, 1831). Similarly, the early 20th century modern city gave rise to traditional ecology, dominated by the studies of the Chicago School (Park et al., 1925) and Social Disorganization Theorists (Shaw and McKay, 1942). According to traditional ecology theories (Moral Statisticians, Chicago School, Social Disorganization), social conditions affect human behaviour, leading some people to become criminals, and this is why these theories are also referred to as “offender theories”.

By utilizing simple analytical methods, such as visual inspections and simple statistical tests following the application of cartographic techniques (Whitt, 2001:231) at a “macro” ecological level, the French moral statisticians Quetelet and Guerry, (Whitt, 2001:231; Herbert, 1982 in Wu, 2001:1) and early English geographers (like Glyde, 1856) found out that crime rates and types varied considerably across different parts of their case study areas (Wu, 2001:2). In addition, they found that crime rates remained stable over decades (Whitt, 2001:231; Herbert, 1982 in Wu, 2001:1), and that crime rates and types also varied with respect to aggregation levels (cities, counties, etc.) (Glyde (1856) in Wu (2001:2)).

Around a century later (Table 1) the Chicago School theorists (Park et al., 1925) established the social ecology of cities (Jones, 1970:138) and the corresponding Chicago School Theory of Crime, proposing their five concentric zone city model for

modern cities, which was first applied in the city of Chicago. In their model, in which cities evolve under ecological processes of invasion, dominance and succession by using similar techniques to the earlier ecologists, but this time at a “mezo” level, the theorists soon discovered that crime and vice emerged (Park et al., 1925 in Wu, 2001:14) to become endemic in Zone II (Park (1969) in Schwab (1992:6)) and among the groups that live in this zone or zone of transition. This zone is characterized by warehouses, pawn shops and slums that develop under the competing market forces of high land prices and low building values (Park et al. (1925) in Wu (2001:14) and in Miethe (2001:204)) as a result of “the pressure from the center of the city to expand outward” (Clark, 2001:370).

Based on the Chicago City Model, the founders of the Social Disorganization Theory (Shaw and McKay (1942) in McNulty (2001:375)) concluded that different neighborhoods of the city displayed different delinquent rates, which decrease as distances from the CBD increase. In addition, the highest rates were to be found in Zone II, which is characterized by high social disorganization, and the rates of delinquents became stable over time in these neighborhoods (Shaw and McKay (1942) in Wu (2001:14-16); Shaw and McKay (1942) in Quimet (2000)).

The supposed modern(ist) social and spatial restructuring of these Western cities after World War II, which took place from the mid-1940s up until the early-1970s, was accompanied by a new trend of (early new) crime ecological thinking through Defensible Space (Newman, 1972), *CPTED* (Jeffrey, 1971), and Space Syntax Theorists (Hillier, 1977; Hillier et al., 1983). Early new ecological approaches emerged as the result of criticisms initiated for traditional crime ecology or offender theories in the early 1970s (Table 1 and Figure 1). These brought counter arguments that were based on the limitations of traditional ecology, and in line with this, they placed emphasis on the physical characteristics of the criminal acts, leading to a shift of emphasis from the offenders towards the events, and to the place-based conditions or opportunities for criminal acts before the full rise of late new crime ecological theories.

In Defensible Space, Newman, the founder of the theory, studied two high-rise design-stage¹ public housing projects in the cities of St Louis and New York that had

¹ The principles of the ‘City of Towers’ style of urban renewal can be described as follows: “Generally tilted off the street grid of surrounding neighborhoods, these designs freed up as much land as possible, reducing lot ‘coverage’, and creating super-blocks of vast self contained communities, complete with their own identity and project names. Like their predecessors in stage one, it was held as an article of faith by architects, planners and the popular press that the architectural and site distinctiveness of these new high-rises would help them ‘break with adjacent ‘slums’”, thereby insulating their occupants from the social and physical disorder of the surrounding blight (Franck and Mostoller, 1995)” (Schneider and Kitchen, 2002:127).

failed after their construction, and became breeding grounds for criminal activities, which is a problem that has emerged in all such housing projects, even in peripheral areas (Brantingham and Brantingham, 1981a:25). After researching the problems of these public housing projects and how they lead to increases in crime rates in any large residential building (Oc and Tiesdell, 1997:53), he argued that “the modification of specific features of urban architecture would reduce crime” (Brantingham and Brantingham, 1981a:18), and proposed four physical principles for the construction of a space that defends itself. In his opinion, such an approach would be possible by reversing the conditions of the physical/built features of a place that decrease the social control capacities (Newman, 1972). These principles are (1) Territoriality, (2) Natural surveillance, (3) Image, and (4) Milieu (Environmental setting).

Similarly in the same period, Jeffrey founded the approach known as *CPTED* (Brantingham and Brantingham, 1981a:18; Schneider and Kitchen, 2002:100), which is accepted today as one of the two “most well developed opportunity reduction approaches to crime prevention” (Oc and Tiesdell, 1997:51). The other approach, Situational Crime Prevention (SCP), was developed as a group of principles for urban design putting forward the argument that “the modification of specific features of urban design would reduce crime” (Brantingham and Brantingham, 1981a:18). The basic idea behind *CPTED* is the prevention of crime on the basis of relationships between humans and their environment (Jeffrey, 1971 and Jeffrey, 1977 in Schneider and Kitchen, 2002:100).

Today, the *CPTED* approach is implemented in urban design/planning programs that target the development of safer and defensible spaces, particularly in Britain and to a lesser extent in North American countries (Schneider and Kitchen, 2002:103). Many of the *CPTED* strategies, including “natural access control,” “natural surveillance”² and “territorial reinforcement,” are common with those of the Defensible Space approach (Oc and Tiesdell, 1997:97) although there are some differences in the way the contexts brought by these strategies are looked at.

² “*CPTED* practitioners and consultants have categorized original and derived defensible space strategies, such as surveillance and access control, by their methods of implementation. For example Crowe (1991, 2000) defines surveillance in terms of three elements: natural surveillance (facilitated by design, which was Newman’s fundamental conception), organized surveillance (conducted by people, such as guards or police), or mechanical surveillance (facilitated by electronic or mechanical devices). In practice, these are not mutually exclusive categories and spaces may be defended by any combination of techniques or by all of them together. The same subcategories also apply to the principle of access control, so that entrances to apartment complexes may, for example, be protected by the placement of windows that look out onto entry paths and doorways (natural surveillance), by security guards or doormen (organized surveillance), or by CCTV (mechanical surveillance). Again, it is not uncommon to find all three elements operating at once, especially in upscale developments.” (Schneider and Kitchen, 2002:102).

For example, as far as the territory context is concerned, the CPTED approach focuses much on the relation between land use and activity locations and territoriality (Schneider and Kitchen, 2002:101), and less on its biological importance (Oc and Tiesdell, 1997:57). CPTED argues that physical design “can create or extend a sphere of influence so that users of a property develop a sense of proprietorship over it” (Peel CPTED Committee, 1994:3 in Oc and Tiesdell, 1997:57).

Hillier's (1977) Space Syntax, is similar to Newman's (1972) Defensible Space in stating that it is possible to reduce or prevent crime and increase the defensibility of a space through its physical characteristics. However, Hillier and Newman differ in their main hypothesis in approaching this question. While Newman (1972) argues that physical design directly influences crime rates, Hillier suggests that spatial configuration in the first place is related to patterns of social interaction, and thus may affect crime rates (1973 in Fanek, 1997:29). In general, while arguing that some spatial/structural/built layouts or conditions give rise to occurrences of criminal acts, for their explorative means, the early new ecological studies that emerged between the modern(ist) city of the mid 1940s to early 1970s usually utilize the “micro” spatial level, which corresponds to urban architecture and design scale.

The challenges within the context of spatial and social restructuring of today's global(izing) Western cities since the late 1970s made it clear that the resolutions of the previous era were also inadequate. Therefore, following a wave of criticisms of the previous theories, there emerged an increasing need for emphasis on place, resulting in the development of late new ecological theories to pursue crime distribution and prevention from

a place-based perspective (Figure 1). In line with this, starting in the late 1970s, several late new ecological approaches were founded by Routine Activities (Cohen and Felson, 1979), SCP (Clarke, 1980; Clarke, 1992; Clarke, 1997), Rational Choice (Cornish and Clarke, 1986), and Crime Pattern Theorists (Brantingham and Brantingham, 1981a, b; 1984; Wilson and Kelling, 1982; Sherman et al., 1989; Canter and Larkin, 1993; Rossmo, 1995). The last theory in particular is still undergoing development today. In a wider context than the early new theories, the late new ecology states that spatio-temporal conditions affect the distribution of criminal acts, such that some targets (in terms of space and time) become more attractive than others. These take names such as Place-based Crime Theories and Crime Place Theories, where place refers to both a specific space and time (Brantingham and Brantingham, 1981:8); and Event Theories, Opportunity Theories or Environmental Criminology Theories.

The first late new approach, Routine Activity Theory, proposed by Cohen and Felson in 1979, describes when, where and how criminal events occur (Robinson, 2001: 335), and utilizes the opportunities provided by the

Routine Activities of the victims and possible absence of controllers as an analytical method (Wu, 2001:33). Routine Activities are daily activities that are carried out to meet individual needs in a repetitive and routine way, and are independent of biological or cultural differences.

They include activities that provide work, food, shelter, entertainment, learning, child rearing and the likes (Cohen and Felson, 1979:593). According to this theory, crime occurs in the routine activity areas of targets when three conditions take place simultaneously, being: a likely/motivated offender; a suitable/desirable target; and the absence of a guardian/crime suppressor capable of preventing the criminal act (e.g., friends, parents, teachers, place managers) (Cohen and Felson, 1979:589).

Situational Crime Prevention (SCP) was founded by Clarke in 1980 (Clarke, 1980 in Weisburd, 2002:198), and was subsequently developed in 1992 (Clarke, 1992 in Oc and Tiesdell, 1997:58) and in 1997 (Clarke, 1997 in Schneider and Kitchen, 2002:104). The continuous development of SCP by Clarke is not only influenced by early new theories of Crime Prevention through Environmental Design (CPTED) and Defensible Space, but also by late new crime ecology theories of Routine Activity and Rational Choice (Schneider and Kitchen, 2002:104).

SCP was developed in line with the basic concept of the opportunity structure of a crime situation, and as stated previously, after CPTED, is the second “most well developed opportunity reduction approach ... to crime prevention” (Oc and Tiesdell, 1997:51). It provides generalizations, claiming that it is possible to reduce opportunities for offending by ‘increasing efforts,’ ‘increasing risks,’ ‘reducing rewards’ in crime (Oc and Tiesdell, 1997:59), and by ‘removing excuses’ for crime (Schneider and Kitchen, 2002:104-105).

According to Rational Choice Theory, which was founded by Cornish and Clarke in 1986 (Fritz, 2001:141), offenders are seen as rational decision makers who aim to maximize their benefits (potential rewards) and minimize their costs (expended effort) and risks when choosing their targets. Thus, they take into account space and time in achieving their goals (committing criminal acts). As such, environmental factors affect the choices made by offenders, who commit crimes with decisions taken not with absolute and value rationality, but with bounded and instrumental rationality (Cornish and Clarke, 1986 in Schneider and Kitchen, 2002:106). In other words, the distribution of criminal acts in space and time can be defined (Cornish and Clarke, 1986 in Fritz, 2001:141) as an imperfect neo-classical utilitarian human conduct (economic man) (Oc and Tiesdell, 1997, 44-45), and is seen as a function of the opportunity and rewards offered by the environment (situation) in which it takes place, and not as a function of defects in the offender's values, beliefs or socialization (Schneider and Kitchen, 2002:106).

Crime Pattern Theories try to find interactions of offenders with their social and physical environments that influence their target choices and hence, the distribution of the criminal events in space and time and among other targets (Brantingham and Brantingham, 1993 in Wu, 2001:32). In order to achieve this, they make use of an analytical approach that combines Routine Activity and Rational Choice perspectives, and the concepts of 'awareness space,' 'activity space' and 'search areas' of offenders³ (Schneider and Kitchen, 2002:108).

In general, for their explorative means, the late new ecological studies that emerged in the late 1970s and still continue in today's global(izing) city usually utilize the "mezo" spatial level. In addition, they reached a common conclusion that the spatio-temporal distribution of crime is not random, but rather has a distinct pattern that occurs in a manner that can be explained (Wu, 2001) as likelihood being influenced by the differentiating spatio-temporal characteristics of the urban area.

Up to this point, early and late new ecological theories have been explained separately for the reasons earlier stated, but from here on, due to the similarities in their main arguments and in keeping with existing literature, this paper combined both under the term "new crime ecology theories".

Empirical studies that explore the distribution of crime incidents, particularly those focusing on the new ecology of crime (Nelson et al, 1996; Henry and Bryan, 2000; Wu, 2001; Sweet, 1996; Kinney, 1999; Clontz, 1995), rely mostly on quantitative methods and computer technologies such as Geographic Information Systems (GIS), in addition to statistical and/or spatial data analysis software. All of the above studies utilize one or more ecological level, being "micro," "mezo" or "macro," for their spatial and temporal analyses.

In the late 1970s to early 1980s, some Western countries particularly the United States and Britain started to integrate these theories into their urban planning and design practices with the aim of preventing and reducing crime (Oc and Tiesdell, 1997:51). However, the reduction of opportunity for crime through environmental design (e.g., through Defensible Space principles) was a long way from being a leading factor in most house construction activities, the integration of these principles into local level planning system was initiated only recently (Schneider and Kitchen, 2002:122,274,280-281).

In Turkey, most of the studies that have been reviewed look at the problem from a traditional perspective (Kaplan, 1980; U ur, 1986; ener, 1994; Sayın, 1998;

³ The awareness space of offenders is a mental map indicating how to find specific shops, train stations, etc. The activity space of offenders exists in the awareness space, and is centered on their Routine Activities of home, work, entertainment, etc. (Brantingham and Brantingham, 1981b; Brantingham and Brantingham, 1984 in Harries, 1999; Brantingham and Brantingham, 1993 in Wu, 2001:32). Both contain "search areas" in which victims and targets with low risk are identified (Brantingham and Brantingham, 1981b).

Erkut et al., 2001; Alpdemir, 2006) and to a lesser extent from the perspective of new ecology (see Gül, 2002; Düzgün and Erdo an, 2003; Akpınar, 2005, Deniz, 2007), or integrate new theories with traditional ones (Ünlü et al, 2000).

Currently, some of the principles of new crime ecology, such as Defensible Space and CPTED, are being implemented in Turkey without awareness that they are parts of such approaches. However, regardless of this, the possibility of reducing opportunities for crime through the implementation of place-based crime prevention principles, to be carried out by both planning and policing authorities, is still lacking; and this study aims to address this by raising awareness in the planning authorities of the potential in "planning/designing out crime" (Schneider and Kitchen, 2002:280). This study investigates criminal activities in a new ecology (place based) context in order to contribute with concrete urban planning/design proposals to the prevention/reduction of crime, particularly in urban areas undergoing some level of transformation. In doing so, problems that exist within the urban planning and transformation process in the country are also elaborated.

SCOPE, DATA, GIS-BASED SYSTEM, ANALYSES AND FINDINGS

Scope, data and the Geographic Information System (GIS)-based system

In this paper, the relationship between the distribution and clustering of crime incidents and the urban structure is explored and the integration of new crime ecology theories (such as Defensible Space, CPTED, and Crime Pattern) that have been developed, mainly in Western countries (Europe and North America), into the Turkish planning system is studied from a critical perspective. The paper includes a case study of a group of selected place-related crime incidents (in terms of space and time) (Brantingham and Brantingham, 1981) against people, property, and against people and property, occurring in a study area over a specific period. The crime incidents cover a selected subset of 529 cases from among 1,139 registered cases, that is, those known to the police. The study area was selected as a part of the Keçiören District in Ankara Metropolitan Area, which comprises three different settlement types – that is planned, early stage *gecekondu*⁴ (squatter) and in-transition areas, where the squatter settlements were under transformation into planned settlements through Improvement Plans (*slah mar Planı*) during the study period. It comprises the developed (built up) sections of all, most or some part of nine neighborhoods in the Etlik Police Station Zone (EPSZ) (Figure 2), and the study period covered the whole year of 2000.

The paper is based on the main argument that crime incidents display differences in spatial and/or temporal distribution among the three different development patterns, which are planned, early stage *gecekondu* (squatter) and in-transition. It approaches the

⁴ "Gecekondu" (squatter) literally means "built overnight" in Turkish. In the study area, the squatter (*gecekondu*) housing referred to is *early stage gecekondu*, which is different from the *late stage gecekondu* developments that have dominated the big metropolises since the 1980s. The difference between the two types of housing is given in the discussion Section.

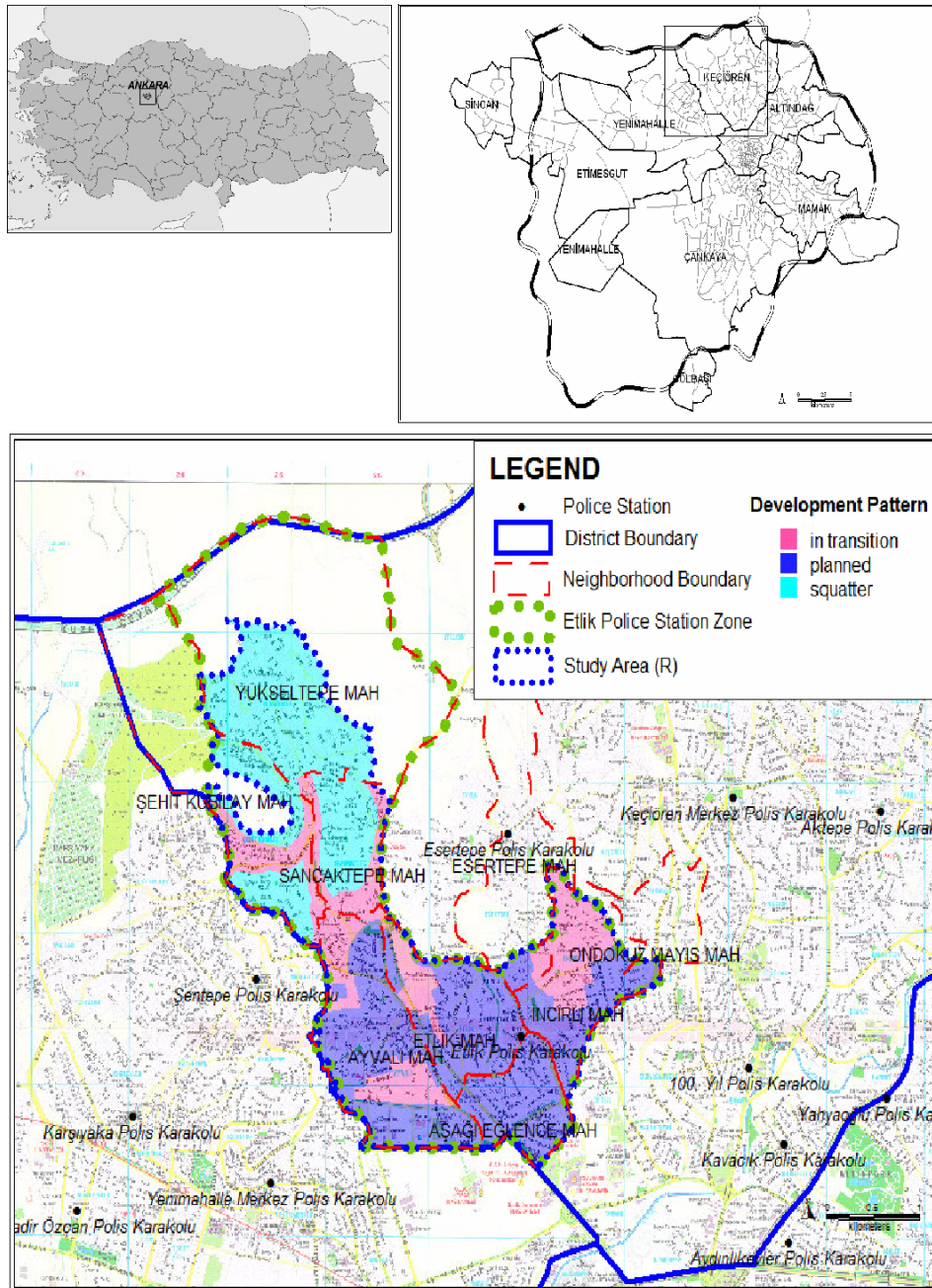


Figure 2. Study area. Source: Adapted from Erdo an, 2007:68 based on information obtained from Ankara Kent Planı, 2001–2002; Ankara Metropolitan Municipality, 2004.

problem of place-based crime prevention from a comparative and systematic analytical perspective in exploration of crime incidents, their types and the most frequent commitment types, which imply aggravated assault, simple assault and domestic violence for crime incidents against people; residential burglary, commercial burglary/theft and theft from automobiles for crime incidents against property. It concentrates both on the spatial and/or temporal aspects of the incidents in terms of their general and local scale properties in the three different development patterns, at mezo–

micro scales. The mezo-micro spatio-temporal levels were chosen so as to allow an understanding of the implications for the settlement level or medium- and large-scale urban planning and policing in Turkey. This study begins by addressing how new crime ecological theories and their practical implications may be integrated into the medium–large scale urban plans of the locality in question in a narrow context; and the medium–large scale urban planning system (conducted mostly at 1/5000 and 1/1000 scales, and in specific circumstances at larger scales, like 1/500) in a wider

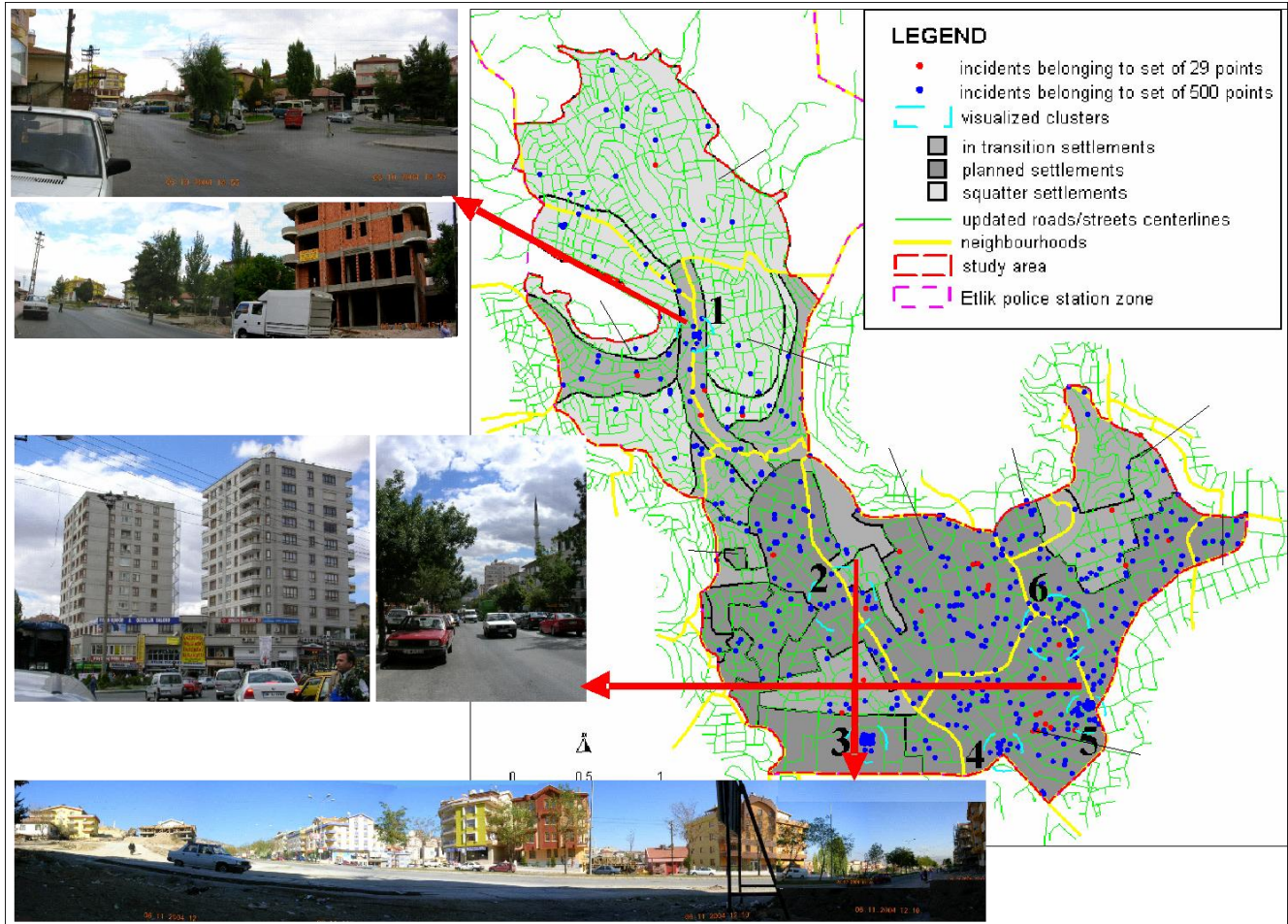


Figure 3. Visualization of the crime incidents with respect to development patterns of the neighborhoods. Source: Adapted from Erdo an, 2007: 114, 116, 117, 151.

context.

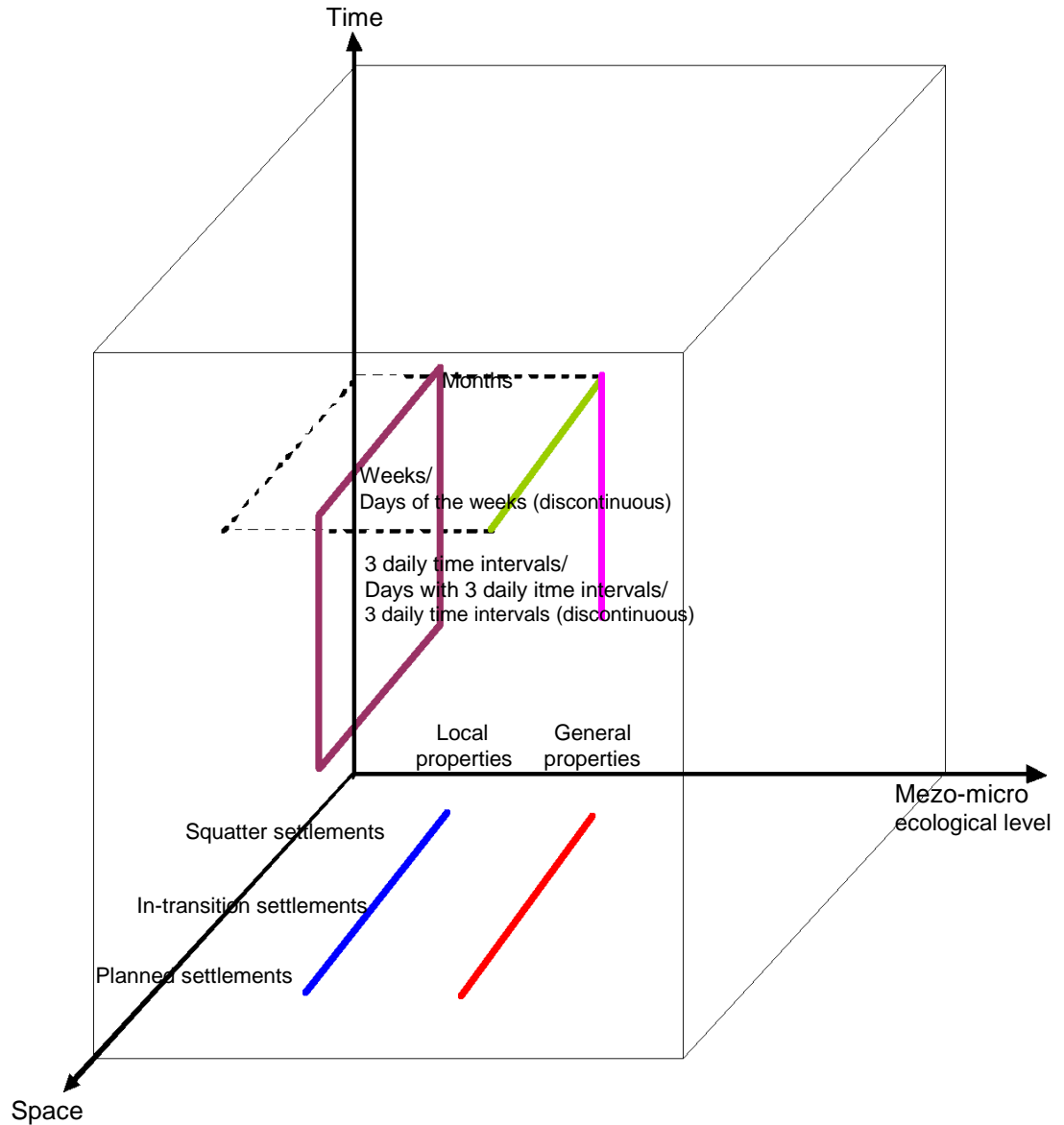
The crime incidents were analyzed in two main stages: The first stage involved a spatial analysis of the incidents; while the second stage involved a temporal and spatio-temporal analysis of the same incidents. Both analyses are repeated for the exploration of the three crime incident types together, followed by an exploration of the incidents with respect to their types and the most frequent commitment types. These analyses are carried out in relation to both the general and local scale spatial and/or temporal properties of the incidents. All of the above analyses were carried out using elaborate spatial statistics techniques and other quantitative methods using a GIS-based system after a geocoding of the crime incidents to visualize their spatial distribution. The purpose of geocoding is to assign tabular data to a location on the earth's surface that will allow a visualization of their spatial characteristics. In the study area, after revision following field surveys, the final geocoding, which covers a process of assigning tabular data to a location on the earth (The Crime Mapping Laboratory Police Foundation, 2000), resulted in the placing of 500 incidents within a 100 m accuracy out of 529 (94.52%) selected crime incidents. The remaining 29 incidents (5.48%) are placed according to their street/road/linear park addresses, the mid points of which are assumed to be the incident places. In Figure 3, the distribution of the selected incidents and their visualized hot spots (clusters) in the

study area are presented together with their geocoding information.

The GIS-based system used is composed of a framework of five components, utilized by means of data exchange without a common interface among them (Sui, 1998:653). These components include a relational database management system, several additional document and spreadsheet softwares, a standard desktop GIS, a statistical package that performs almost all kinds of non-spatial statistical analyses of spatial data, and a spatial statistic or spatial data analysis software.

ANALYSES AND FINDINGS

The analyses and the used techniques can be summarized within the context of the conceptual scheme presented in Figure 4, showing the three different dimensions of the crime incident analysis used in this paper, being space, time and mezo-micro ecological levels. In Figure 4, a bar situated in the cube represents an analysis in two dimensions, which in turn corresponds to space-ecological level (general and local [spatial



- *Spatial Distribution of Incidents: General Distribution (together, and with respect to their types and commitment types)*
- *Spatial Interaction of Incidents: Local Distribution (together, and with respect to their types and commitment types)*
- *Temporal Distribution of Incidents: General Distribution (together, and with respect to their types and commitment types)*
- *Spatial Distribution of Incidents in Time: General Distribution (together, and with respect to their types)*
- *Space-time Interaction of Incidents: Local Distribution (together, and with respect to their types and commitment types)*

Figure 4. Three-dimensional representation (*space, time and ecological level*) of the distribution of crime incidents. Source: Adapted from Erdo an, 2007:8.

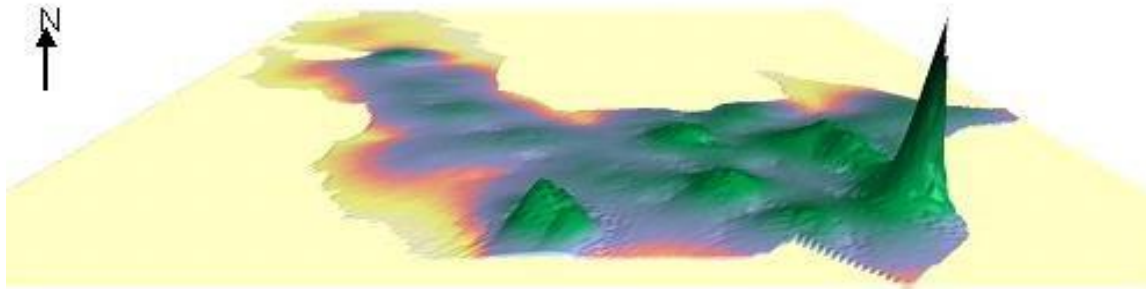


Figure 5. 3D colored view of the chosen Kernel Estimate from south of the study area with a surface exaggeration of 3. Note: The peaks in the figure depict hot spot areas on a continuous surface laid over the study area. Source: Erdoan, 2007: 110.

interaction] spatial distributions of crime incidents in the mezo-micro ecological level), time-ecological level (general temporal distribution of crime incidents in mezo-micro ecological level) and space-time (general spatial distribution of crime incidents in time).

The two-dimensional general spatial descriptive analyses refer to mapping, frequency counts, rates, z scores and location quotients of crime; and for temporal analyses, frequency counts involve all descriptive statistics, including mean, median, standard deviation, Coefficient of Variation, Min, Max, Skewness and Kurtosis. The numerous statistical analyses for the spatial distribution range from one-way ANOVA; pairwise multiple comparison tests, chi-square test of independence, quadrat method tested by chi-square to kernel estimation (Figure 5) and a one-way ANOVA on its results, and from pairwise multiple comparison tests, two-sample t test with Bonferroni adjustment to F test (equality of variances test) in testing of the variation (standard distance deviation). When the spatial distribution in time is analyzed, in addition to mapping, one-way repeated measures ANOVA and paired t test analyses with Bonferroni adjustment were carried out. Similarly, when the local scale spatial and statistical analyses are summarized, it is seen that they range from nearest neighbor index method tested by a z (Clark-Evans) statistic, to K function (Ripley's K) which is assessed by a Monte Carlo Simulation, and from a K -order nearest neighbor index analysis (15th Order), which is tested for its first order by a z (Clark-Evans) test, and to one-way repeated measures ANOVA, and paired t tests. However, the plane in Figure 4 corresponds to the simultaneous treatment of the space and time variables in a local scale distribution (space-time interaction) of crime incidents, which is explored by utilizing the Mantel Index and assessed through a Monte Carlo Simulation.

The main findings from these analyses suggested that in line with the new ecology theories, the general properties of crime incidents displayed clustering in space and time. In general, they were concentrated mostly in planned; less in in-transition; and least in early

stage *gecekodu* areas; and particularly during the spring-summer months. To illustrate, while 84% of the incidents occurred in the mostly planned (~3/4) and partially in-transition (~1/4) neighborhoods, with a rate (crime incidents per 10,000 population) of 32.96, only 16% took place in the mostly squatter (~3/4) and partially in-transition (~1/4) neighborhoods. On the other hand, crime incidents against people took place at a higher rate in squatter areas, and mainly between 6 p.m. and midnight, while incidents against property occurred mainly in planned areas between midnight and 6 a.m. As for the local scale properties, crime incidents in aggregate generally displayed a spatial interaction (clustering), but not a space-time interaction. A spatial distribution in time suggested that the incidents recur usually in planned areas. General properties of crime incidents against property displayed the highest level of spatial, and also temporal clustering; and particularly spatial clustering (mainly for commercial burglaries/thefts) and space-time clustering (for residential burglaries) at a local scale. Likewise, there is a relatively homogenous general spatial distribution of the incidents against people, accompanied by a non-local scale spatial clustering or space-time clustering, whereby space-time dispersion was observed for simple assault.

From among these findings the first one is the higher concentration of crime incidents in the planned areas, in which five out of six hot-spot areas are located, and the opposite finding for the squatter areas (Figure 3, and particularly the peaks in Figure 5) is emphasized as the main finding of the study and discussed in further detail in the next section.

THE RELATIONSHIP BETWEEN THE URBAN STRUCTURE AND THE CRIME INCIDENT DISTRIBUTION

The observed clusters of incidents confirmed the relationship between the distribution of incidents and the urban structure. In other words, the point pattern, which

was found to be clustered, revealed that some urban areas and respective socio-economic settings create more environmental opportunities in space when compared to other areas. These opportunities in the sub-regions of the neighborhoods are effective in the clustering of a larger number of incidents in smaller areas, or in hotspots. A visualization and mapping of crime incidents suggests that 5 out of the 6 hot spots (“2” to “6”) identified in the study area are located in the planned sections of the southern (mostly planned) neighborhoods, while only one (hot-spot “1”) is located in the in-transition area in the northern neighborhoods (mostly squatter). It is worth noting that none of the hot spots are found in the squatter settlements (Figures 3 and 5).

The locations of these hotspots verify the suggestions of the new ecological theories, (Routine Activities, Rational Choice, and Crime Pattern) for Western cities. For example, for the City of Jackson (Mississippi), “[t]he picture of a high crime probability site can be described as follows” a site in which the adjacent areas which are easily accessible through a street network ... with a high diversity of land use and a high density of residential and general commercial buildings, particularly retail commercial for eating and drinking” (Wu, 2001:p.xii-xiii).

Similarly, a detailed investigation into the urban structures of the six hot spots reveals some common as well as differentiating properties concerning the development pattern, high accessibility, land use, CBD functionalities, and crowdedness and vividness (Table 2, Figure 3). As stated, these environmental properties are mostly relevant to the planned and to a certain degree to the in-transition, areas and not to the squatter developments, in which no crime incident hot spot is found.

Therefore, the planned settlements in the study area are vulnerable to incident occurrences, mainly in routine activity spaces and times (Cohen and Felson, 1979), and offer more supportive and easier environmental conditions for rational offenders to escape from the incident scene. Examples of these can be given as residences, diverse commercial and service workplaces, places containing different kinds of transportation facilities, highly accessible and predictable roads, crowded streets, low levels of neighborhood relations, high concentrations of people of mixed origin, and areas with a low sense of community and indifference to strangers.

On the contrary, it is highly probable that *gecekodu* settlements, being mostly residential and having homogenous physical and social environments, coupled with the strong sense of community and the feeling of belonging and being part of a place (Erman, 1997:105; Güne -Ayata, 1990/91:98; Ayata, 1989:110) have prevented exposure to high incidents rates. This is still the case for the *gecekodu* housing in the study area and period (2000), which display the early stage

characteristics that started to develop mainly in the 1960s (left map of Figure 6).

A summary of the social and physical structures and of different descriptive measures of crime incidents in the neighborhoods are presented in Table 3, while the physical situations of the neighborhoods are mapped in Figure 7.

In order to build a causal relationship between the incident rates (crime incidents per 10,000 population) and the development patterns of the neighborhoods, a multiple regression analysis is performed in which the rates of incidents are explained in terms of two independent variables, that is, the ratio of squatter and planned areas to the in-transition areas⁵. As stated earlier, the study area consisted of the developed (built up) sections of all, most or some parts of nine neighborhoods in the Etlik Police Station Zone (EPSZ), from where the number of cases that could be utilized for the computations of the rates and the areas in this analysis have been drawn. Accordingly, since a multiple regression analysis is performed in only a small number of cases (n=9), and due to the consequent limitations⁶ including the significance value, which is $p=0.10$ (Stevens, 1996:249 in Pallant, 2001:173), for

⁵ In order not to include missing values in the analysis, the assumption made in the computation of the independent variables involves ensuring a minimum of 0.01 ha (100 m²) size for each development type in each neighborhood. For instance, if a neighborhood composed only of a *planned* development pattern (like all *A a t E lence* neighborhood with a size of 85.58 ha) then it is assumed to have a 100 sqm *squatter* and 100 sqm *in-transition* development, as well.

Furthermore, although the same information is utilized in obtaining the two independent variables (“SQDIVBYITR”: squatter areas divided by in-transition areas and “PLDIVBYITR”: planned areas divided by in-transition areas), the multi-collinearity and singularity assumptions are met. “Multi-collinearity exists when the independent variables are highly correlated ... Singularity occurs when the independent variable is actually a combination of other independent variables” (Pallant, 2001:136-137). The correlations and one-tail significance levels are presented below.

Rate vs. SQDIVBYITR: $r = -0.799$ ($p=0.005$, which is significant at $p = 0,05$ level)

Rate vs. PLDIVBYITR: $r = 0.489$ ($p=0.091$, which is significant at $p = 0,10$ level adopted)

SQDIVBYITR vs. PLDIVBYITR: $r = -0.134$ ($p = 0.365$, which is not significant)

In addition, according to Tabachnick and Fidell’s (1996 in Pallant, 2001:137) definition of outliers, that is, having standardized residual values above 3.3 or less than - 3.3, this assumption is also claimed to be not violated. Moreover, although normal probability plots suggests that the results of an analysis to meet the assumptions concerning the normality, linearity, and homoscedasticity; the residual plot displays some departure from them. Because of these, and the previously mentioned limitations, it should be re-emphasized that the analysis results should be considered cautiously. However, the results are worth presenting, at least for the study area.

⁶ This multiple regression analysis was performed with the minimum number of independent variables that are required. That is, the number of independent variables is two, and the cases-to-independent variables ratio is approximately 5 (that is, 9/2), which conforms the 5 to 1 ratio of Hair et al (1998:166), under which no generalization could be made.

Table 2. Detailed spatial properties of the urban areas of the six crime incident hot spots.

Hot spots (Clusters)	Development			High accessibility				Land use					CBD functionality		Crowdedness and vividness
	In-transition	Planned	Squatter	Terminus of public transport route	On a public transport route	On or near a main junction	On one or more main road(s)	Mixed (residential dominate)	Regional scale wholesale	Park	Separate and large auto park	Education facility in or nearby	Retail commerce and service	Cultural	
1	X			X		X		X					X		
2		X			X		X	X		X				X	
3		X			X				X		X				
4		X	NONE		X	X	X	X		X	X				X
5		X			X	X		X		X	X		X		X
6		X			X	X		X				X	X		X

Source: Erdo an, 2007:115.



Figure 6. The years when the settlements were initially established and the transformation pace in 2004 in the neighborhoods of the study area. Source: Erdo an, 2007:70,76 and adapted from pp. 77, 151.

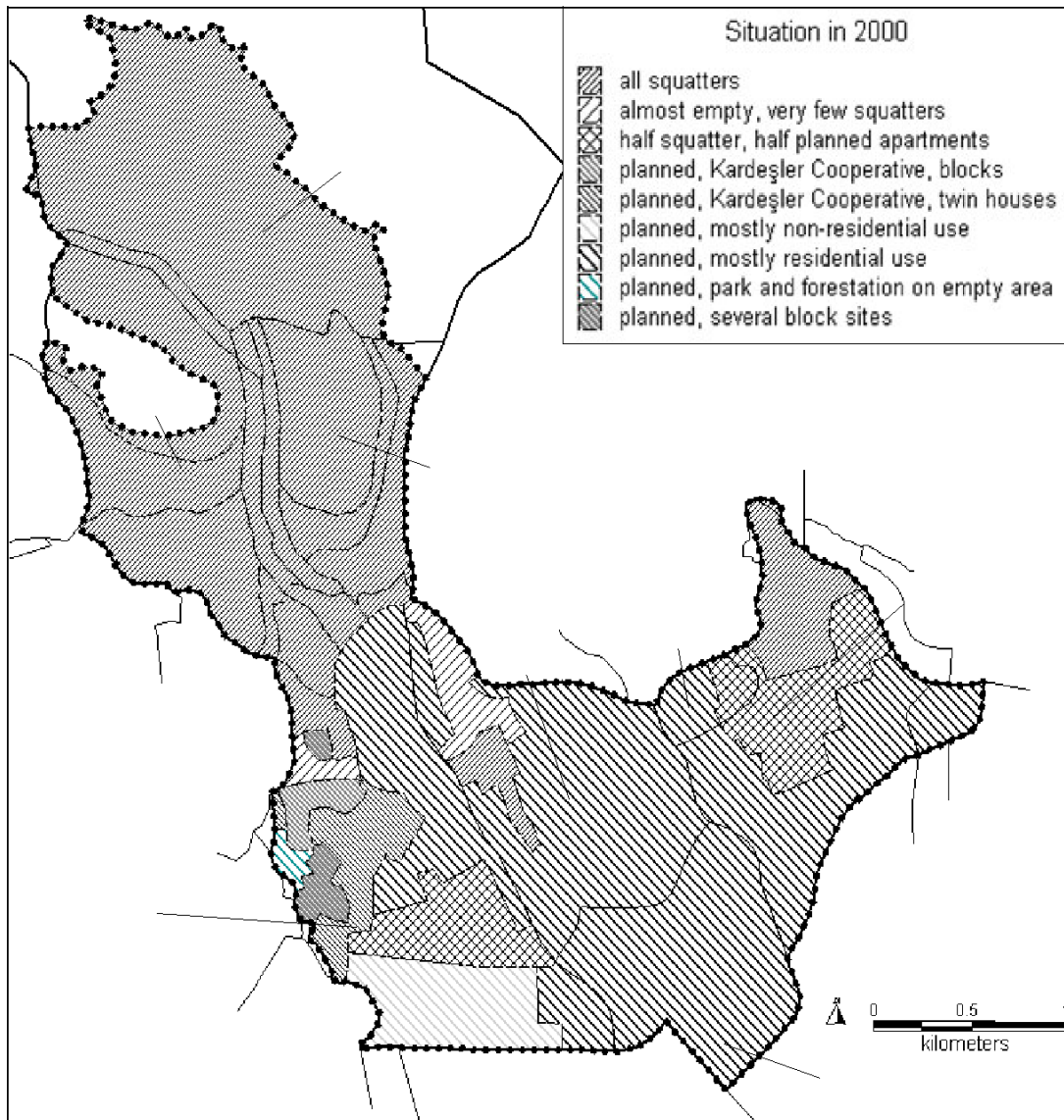


Figure 7. Situation in 2000 in the neighborhoods of the study area. Source: Erdo an, 2007:73 and adapted from p. 151.

generalization, the results should be approached with caution.

With reference to the analysis results, the model and its standardized form are constructed as follows, whereby the significances of the coefficients are also given under the model itself.

Model:
$$Y = 31.145 - 0.248X_1 + 0.001X_2$$

 Significances: $(p < 0.0005)$ $(p = 0.008)$ $(p > 0.05)$
 Standardized Model:
$$Y = -0.747X_1 + 0.388X_2$$

where, Y : Predicted incident rate (crime incidents per 10,000 population), X_1 : Ratio of squatter area over in-transition area; X_2 : Ratio of planned area over in-transition

area.

The result of this analysis shows that the combined effect of the relative sizes of the squatter and planned developments to the in-transition areas in the neighborhoods is highly significant, accounting for 71.6% (adjusted R2 [Pallant, 2001:145]) of the variance in the incident rates. Moreover, the standardized coefficients of the model suggest that while a 1 standard unit of change in the X_1 variable contributes with a -0.747 standard unit of change in the dependent variable Y , significant at 0.01 level ($p = 0.008$), a 1 standard unit of change in the X_2 variable contributes with a 0.388 standard unit of change in Y , which is significant at a 0.10 ($p = 0.087$) level. Judging by the current trend of urban transformation in Turkey (see e.g. right map of Figure 6), it is apparent that

Table 3. Summary of social and physical structures and of different descriptive measures of crime incidents in neighborhoods.

	Neighborhoods	Area of urban settlement covered in the study area (ha)	Development Pattern (2000)	Area of Physical characteristics in 2000	Population (2000)	Density (Pop./Urban Settlement Area)	Development Level * (2000)	Household Size ** (2000)	Water-Discharge Users (2000)	Number of Schools	Number of Mosques	Incident Frequency (2000)	Incident Rate: Freq. per 10000 pop. (2000)	Incident Type	Frequency (2000)	Rate: Freq. per 10000 pop. (2000)	Location Quotient of Crime
<i>Mostly squatter (-3/4) and partially in-transition (-1/4)</i>	Yükseltepe	164.51	Squatter In-transition	162.07 2.44	12,218	74.27	0.01	5.61	2,176	1	8	18	14.73	People Property Pe. & Pr.	16 0 2	13.10 0.00 1.64	1.60 0.00 1.43
	Şehit Kubilay	119.94	Squatter In-transition	77.59 42.35	13,847 (1)	115.45	0.01	5.86	2,362	2	5	37	26.72	People Property Pe. & Pr.	30 5 2	21.67 3.61 1.44	1.46 0.37 0.70
	Sancaktepe	91.54	Squatter In-transition	57.95 33.59	8613	94.09	0.02	5.84	1,475	2	5	29	33.67	People Property Pe. & Pr.	16 10 3	18.58 11.61 3.48	1.00 0.94 1.33
<i>Mostly planned (-3/4) and partially in-transition (-1/4)</i>	Ayvalı	210.08	Planned In-transition	148.76 61.32	32,209 (2)	153.32	0.56	4.57	7,047	6	8	102	31.67	People Property Pe. & Pr.	39 55 8	12.11 17.08 2.48	0.69 1.46 1.01
	Etilik	130.36	Planned In-transition	104.67 25.69	37,039	284.13	0.89	3.89	9,512	4	3	97	26.19	People Property Pe. & Pr.	64 27 6	17.28 7.29 1.62	1.19 0.76 0.80
	Aşağı Eğlence	85.58	Planned	85.58	30,201	352.90	0.98	3.56	8,487	4	3	120	39.73	People Property Pe. & Pr.	56 53 11	18.54 17.55 3.64	0.84 1.20 1.18
	İncirli	123.40	Planned In-transition	61.40 62.00	27,603 (2)	223.69	0.57	4.26	6,476	10	3	101	36.59	People Property Pe. & Pr.	61 33 7	22.10 11.96 2.54	1.09 0.89 0.89
	Esertepe	14.67	Planned In-transition	9.10 5.57	17,919 4,200 (3)	286.30	0.61 (a)	4.82	3712 871(i)	1	4	14	33.33	People Property Pe. & Pr.	6 6 2	14.29 14.29 4.76	0.77 1.16 1.84
	19 Mayıs	9.63	Planned	9.63	27,403 3,750 (3)	389.41	0.82 (b)	4.48	6119 837(ii)	1	3	11	29.33	People Property Pe. & Pr.	5 6 0	13.33 16.00 0.00	0.82 1.48 0.00
	TOTAL or MEAN	949.71	Squatter Planned In-transition	297.61 419.14 232.96	169,680	178.67	0.31	4.32	39,243	31	42	529	31.18	People Property Pe. & Pr.	293 195 41	17.27 11.49 2.42	- - -

Legend of Table 3

* This variable is found by subtracting the "Rate of Stove Use" from "1", which is used as a proxy variable to show the lack of comfort brought by development level

** This variable is found by dividing the "total population" by "number of water-sewage users"

(1) Since all the population of this neighborhood live in the study area (*R*), the total population is taken as it is, even though some parts of this neighborhood, characterized by undeveloped areas, is located outside of *R*.

(2) Since very small portions of these neighborhoods lie outside of the *R*, the total population is assumed to be included in the *R*.

(3) These values are found by multiplying the total water-discharge user by household size.

(a) The "Rate of Stove Use" is found by dividing the number of squatters by the total buildings counted for calculation water-discharge user in Esertepe.

(b) Since the physical characteristics of this neighborhood is similar to the portion located in *R*, the neighborhood's "Rate of Stove Use" is assumed to be the same for the portion located in *R*.

(i) This number is calculated as follows:

The buildings in *R*, counted as 4 storey 44 apartment housing, assumed to have 2 water-discharge users in each storey, making 352 users

The buildings in *R*, counted as 11 storey 11 apartment housing, assumed to have 4 water-discharge users in each storey, making 484 users, totally 836 apartment water discharge users

The buildings in *R*, counted as 1 storey squatter, assumed to have 1 water-discharge users in each, making a total of 35 squatter water-discharge users, total users 871

(ii) This number is calculated as follows:

The buildings in *R*, counted as 3 storey 7 apartment housing, assumed to have 1 water-discharge user in each storey, making 21 users

The buildings in *R*, counted as 4 storey 102 apartment housing, assumed to have 2 water-discharge users in each storey, making 816 users, total users 837

Source: Adapted from Erdo an, 2007:287-288.

all in-transition and squatter areas will be completely redeveloped into planned settlements through the Improvement Plans in the near future; and from the regression analysis it can be predicted that there will be a high probability for in-transition and squatter settlements to acquire a similar spatial distribution of crime incidents to those currently being experienced in the planned sections. For the study area as a whole, this implies an overall increase in the incident occurrences, while the likelihood for similar trends in similar inner metropolitan areas should not be underestimated.

The shift of criminal acts from one place to another as a result of intervention in the environment (Oc and Tiesdell, 1997:58, 71-72), that is, the displacement effect, seems to be less realistic for the study area. Nevertheless, the question on the probability of displacement in a wider metropolitan region is yet to be addressed.

DISCUSSION ON URBANIZATION AND URBAN DEVELOPMENT PROCESSES AND THE CHALLENGES FOR THE TURKISH PLANNING SYSTEM IN RELATION TO CRIME PREVENTION

Urbanization, Urban Development and Transformation Processes

The spatial and social restructuring of Turkey between the early 1920s and mid-1940s characterized the early years of newly founded Republic of Turkey (1923) after the 1919–1922 Independence War. In this period, the rate of urbanization was fairly low in the country, and even in 1945 only about 25% of population lived in cities, with a significant population growth observed only in the capital city of Ankara (I ik and Pınarcio lu, 2002:95,111; Ankara Chamber of Commerce (1998) in Eri en (2003:83)).

Accordingly, the main driver of the economy was still agriculture (Zürcher, 1995:285). The social and spatial structures of urban areas were characterized by the patterns created during the Ottoman Empire era, where limited social and spatial differentiation prevailed (Kıray, 1992 in Osmay and Duruöz, 1995:141-149).

In the post-World War II period until the late 1970s, Turkey witnessed a rapid urbanization process. In this period, Turkish big metropolises saw the formation of informal squatter (*gecekondu*) housing by rural migrants in the peripheries (at least when they were first constructed).

Early stage *gecekondu* housing is characterized by their means of land acquisition in the form of squatting on publicly owned lands in non-market conditions, and distinguished by similar non-market conditions prevailed in their construction and use (I ik and Pınarcio lu, 2002:159-163).

In short, such housing was considered legitimate “in the moral economy of the society” (Erman and Eken, 2004:2), and the residents, known as “*gecekondu*”, came from similar villages, ethnic and religious backgrounds, and constructed their dwellings for their “own use” within network relations featuring strong cohesion and solidarity (Zürcher, 1995:392-393; Ilık and Pınarcıo lu, 2002:116-117).

The urbanization of the middle- and higher-income groups between the late 1940s and late 1970s, were characterized by a process called “*apartmanlaşma*” (Ilık and Pınarcıo lu, 2002:102-103), through which multi-storey apartments were being constructed by small-scale contractors in a “build-and-sell” mode (*yapsatçılık*) in inner city settlements. This mode of housing is based on small-scale contractors (*yapsatçı*), who build apartment houses with their own account and utilize their own financial resources, and then sell these units to generally middle and upper- middle class income groups. The land is either bought or supplied by mutual agreement with the landowner on the basis of certain number of flats (Eri en, 2003:92). This form of housing provision also kept its peculiarity and effectiveness in terms of both density increases and the transformation of former *gecekondu* areas through *yapsatçılık* when it was practiced in “demolish-and-rebuild mode” (Eri en, 2003:92).

The spatial and social structure of the post-World War II period until the late 1970s can be described as a time of emerging metropolises, informal but concordant early stage *gecekondu* settlements in the periphery, and mostly non-segregated higher and middle income neighborhoods with apartment buildings built under the initiatives of small-scale contractors (build-and-sell mode) in the inner city and core areas.

As a result of the changing social, economic and political conditions that emerged in the early 1980s, the characteristics of *gecekondu* settlements also started to change. Since the 1980s, these *squatter* developments had been in the form of late-stage *gecekondu* housing. In compensation for the economic deterioration of particularly the poor income groups, several important acts were passed. These acts (enacted between 1983 and 1987) on the one hand legalized these settlements through amnesties, and provided the *gecekondu* with title deeds and infrastructure, causing a new stage of *gecekondu* housing development to emerge. The *gecekondu* houses became commoditized and all the non-market relations and processes, which essential define a dwelling to be a *gecekondu*, for land acquisition⁷, construction, and its use were destroyed, and new markets for the houses, with their peculiar informal and/or

⁷ This situation led to the emergence of new commercial, speculative, and/or rather illegal relations concerning the land, which is known as a “mechanism of shared titles,” and this has increasingly become a new means of land acquisition in Turkey (Ilık and Pınarcıo lu, 2002:161).

formal conditions, emerged (Ilık and Pınarcıo lu, 2002:159-163).

On another hand, through ‘Improvement Plans’⁸, these acts formed the basis for their transformation through a process of redevelopment into planned settlements containing high-density apartment buildings (Duyar-Kienast, 2001:23; Ilık and Pınarcıo lu, 2002:164-167). In most of these settlements, these acts resulted in another unauthorized process, that is, the replacement of the *gecekondus* with poorly built multi-storey apartment buildings (Erman and Eken, 2004:4).

This late-stage *gecekondu* housing is distinguished by continuously degrading environmental and spatial qualities, mainly due to their being built not for own-use; the lack of physical and social infrastructure, including open/green spaces; and a degrading of the social structure due to increased amounts of rental housing occupied by heterogeneous newcomers, resulting in a loss of social cohesion and solidarity, and ghettoizing based on ethnic/religious sect/regional ties (Erman and Eken, 2004:8). Thus, *gecekondus* were now being perceived not as a problem of housing the *gecekondu*, that is the harmless “Rural Other” (Erman and Eken, 2004:4), but were rather considered as a means of seizing the emerging urban rent and as an essential means of surviving in the city (Ilık and Pınarcıo lu, 2002:164) with the residents that have become *varo lu*, who are now *contra* the city (Etöz, 2000) and the threatening other (Erman, 2001:983). Their hopelessness gave rise to a continuous dissolution and a new wave of urban violence that started in Turkey’s biggest city, that is, Istanbul, in the 1990s (Ilık and Pınarcıo lu, 2002:53).

The impacts of globalization and restructuring under the economic conditions after the 1980s, income discrepancies and resultant spatial and social differentiations were felt with more intensity in the largest metropolises (Ilık, 1996 in Eri en, 2003:91). For example, the rate of skyscraper developments to house the headquarters of national and international companies in the CBD, the gated community developments within and around the metropolis and the changing face of *gecekondu* settlements were much more effective in Istanbul than in any other Turkish metropolis. Accordingly, Ankara and other cities have not experienced such urban violence in their oldest *gecekondu* areas, but this does not mean that they will not experience it in the near future. Even by the start of 2000s, some of the oldest “former decent and proper *gecekondu* residences” (enyapılı, 1995 in Osmay and Duruöz, 1995:209), such as the *Çinçin Ba ları* quarter (in the *Gültepe* neighborhood) in the Altında District, have

⁸ The redevelopment process introduced by these plans also introduced a new way out, i.e. the demolish-and-rebuild mode, for small-scale contractors (*yapsatçı*) who had already been severely obstructed by the spatial, social and economic conditions of the cities, and thus had experienced a downturn in construction works from the late 1970s (Ilık and Pınarcıo lu, 2002:166; Eri en, 2003:92).

become a feared locality and a no-go area not only for ordinary citizens, but even for the police (Görgülü, 2006; Gürel, 2006).

It is hoped that new initiatives, such as the one to be carried out by Altında Municipality and the Mass Housing Administration (MHA) in this locality to include the start of an urban renewal project⁹ will soon have a positive impact in changing the negative image of the quarter. However, there is also a likelihood that social and physical improvement based on large scale urban renewal programs and the accompanying decrease in crime rates in one part of a city may result in a corresponding increase in an inferior neighborhood that is not benefiting from these renewal funds (that is, the displacement effect), as has been witnessed in some Western countries (Schumacher and Leitner, 1999:10-11).

In addition, today, most of the urban transformation projects in the squatter settlements are carried out by the Prime Ministry's MHA in cooperation with municipalities. The MHA was established in 1984 as a means of compensating some of the higher income groups for the deterioration of their economic conditions after the 1980s by making a flexible credit mechanism available, especially when people organized themselves into housing cooperatives (enyapılı, 1995 in Osmay and Duruöz, 1995:205). Due to their scales and larger area requirements for construction, housing cooperatives became effective in restructuring the macro-form of big cities. They shifted the form of development from enlargement through the addition of concentric zones towards enlargement through satellite developments around the urban areas.

Nevertheless, since the start of the 2000s with its newly-attained extensive authority, the MHA has begun an urban transformation process with the support of municipalities, taking the form of urban gentrification, projects in which the squatters (Celik, 2010) or older and sometimes historic housing areas are replaced by high rise apartment blocks with surrounding large green areas. In this process, not only is the original and sometimes historic urban fabric completely destroyed, most of the time the residents are also displaced, resulting in severe criticisms and resistance (Ekinci, 2008). Besides the urban development and transformation projects carried out by the MHA, the urban structure and its form in the post-1980 period has been highly affected by another outcome of globalization. The new socio-economic restructuring of this process caused an accumulation of capital in the hands of large scale contractors¹⁰, which, in

turn, reinforced mainly satellite suburban developments¹¹, including the formation of gated communities. These are settlements that have emerged with an understanding of Newman's basic principles in Defensible Space, and dominated by "merits of enclosure, merits of segregation" through the definition of territorial zones or boundary markings (1973 in Schneider and Kitchen, 2002 and Oc and Tiesdell, 1997). Gated communities are generally seen as being a physically, socially, and most importantly ethically very problematic instrument of highest income social groups in protecting them from criminal activities (Ilık and Pınarcıo lu, 2002:71,143-154) in many metropolises since the start of globalization (Ilık and Pınarcıo lu, 2002; Peyroux, 2005; Aguilera, 2005).

Case in the squatter settlements and deficiencies of current planning system in relation to crime prevention

The intensity of crime incidents in the planned areas implies the ineffectiveness of the current medium-large scale planning system, that is, 1/5000 Structure Plans (*Nazım mar Planı*) and 1/1000 Implementation Plans (*Uygulama mar Planı*), in the prevention/reduction of criminal activity. In fact, in the areas to be newly planned in the future and in the already planned settlements, which at present cover at least half of the inner metropolitan area of Ankara, there are some aspects that should be adopted from the early stage *gecekondu* (squatter) settlements. Positive intuitive design aspects, such as the relationship between closed and open spaces and human-scale spatial organizations in the built structure of these neighborhoods have resulted in a homogeneous spatial and social organization (Erman, 1997:98; Ayata, 1989:107-109,124), leading to lower incident rates. Such approaches prevent crime incident occurrences by decreasing the spatial opportunities for their occurrence, and in building a peaceful social

speculation of large capital," in contrast to the urbanization prior to the 1980s that is viewed as "the speculation of small capital".

¹¹ Such residential developments of middle and higher income groups generally assumed the name "site," which has a different meaning to the standard use of the term in English. As quoted by Eri en (2003:108), Öncü (1997b:63) states that "sites are novel phenomenon both architecturally and as a way of life". Öncü (1997b) refers to "site life" as a clean social environment provided by the homogeneity of its residents on the basis of social and occupational backgrounds" (Eri en, 2003:108). Both could be either in the form of high rise developments, semi-attached detached duplexes or triplex residences (Eri en, 2003:117), whereby the *Kat Mülkiyeti Kanunu* (Flat Ownership Law) can be applied vertically or horizontally. Although most are developed in the suburbs, "sites" could also be developed in the inner metropolitan areas. As for the high rise "site" developments, the management of one or more buildings is carried out by one administration, known as the "site administration" (sites that are developed as low rise are also managed by such administrations). Such a management method is different from the individual "apartment administrations" practiced for standard apartment buildings in the inner cities.

⁹ The Gültepe (Çinçin) Mass Housing Project foresaw the demolition of old *gecekondu* dwellings and the construction of around 780 flats on approximately 48,200 m² of land in four blocks, and the creation of the required technical and social infrastructure (Altında Belediyesi, 2007).

¹⁰ As quoted by Tekeli (1987/1991 in Eri en, 2003:91 and in Ilık and Pınarcıo lu, 2002:128), urbanization after the 1980s became "the

lifestyle, accompanied by co-operative, caring, protective and daily face-to-face community relations (Güne -Ayata, 1990/91:92-93; Erman, 1997:95-96; Ayata, 1989:104-106,110).

It is very likely that a high level of neighborhood relations, a sense of community, a low tolerance for outsiders and their isolation, low density and socially and physically homogenous residential areas formed by migrants sharing similar, if not the same, backgrounds (Güne -Ayata, 1990/91:90; Erman, 1997:98-99; Ayata, 1989:103-104,112,123) and similar levels of income have been the most important factors in lowering the level of crime incidents.

In addition to the deficiencies in the current planning system, which are explained in this section, planned areas provide more spatial (e.g., larger number of commercial places) and social (e.g., higher concentrations of residents with high socio-economic status) opportunities for occurrence of crime incidents.

The planning system, which has been in effect since 1985 (Law No: 3194), is applied according to the same principles as the planning of new settlements through Structure Plans (*Nazım mar Planı*) (at 1/5000 scale) and Implementation Plans (*Uygulama mar Planı*) (at 1/1000 scale); and the transformation of the current squatter settlements through Improvement Plans since 1984 (Law No: 2981) . This current legislation can be blamed for the prevailing physical appearance of contemporary Turkish cities, where the urban identity has been lost to a great extent.

The main problem of this planning process is that it only takes into account some decisive natural thresholds, such as geology and topography, and existing cadastral divisions that may influence future ownership patterns, but not the social and demographic structure of a community. Although the planning report includes analyses and field studies, the plans themselves fail to take these social and demographic factors into account, either for the existing community, or for the incoming population that will reside/work in the locality.

A further fundamental problem with the system is that it contains no urban design components, and does not define the relationships of buildings with their immediate and wider area environments. Following this approach, each building is constructed as an individual unit, independent from its surroundings, without "any consideration of the functional use of the grounds or the relationship of a building to the ground area it might share with other buildings" (Newman, 1973:58). In such a planning scheme, the boundaries of blocks (a group of buildings with streets on four sides) into which building plots will be assigned afterwards, and the densities of the buildings within these blocks in terms of floor area ratio and use area ratio, and/or the maximum height of the building, are defined. The blocks are generally formed in such a way that a group of plots are combined in two rows. In this block, the implementation plan realizes

construction of monotonous and repetitive apartment buildings on each plot, whereby the buildings back onto each other, while the fronts face the surrounding roads through which they are accessed and/or serviced. In Figure 8, a section from the Implementation and/or Improvement Plan(s) and the accompanying parcel plan(s) from the study area are presented.

In general, most Implementation and/or Improvement Plan(s) facilitate the construction of housing units with an increased floor area ratio and use area ratio, resulting in high-rise buildings with large floor areas in certain parts of the metropolitan areas of Turkey. In the study area, such high- density apartment buildings are mainly observed in the in-transition, and to a certain extent in the planned areas. For instance, the apartment buildings in some parts of the study area have up to 20 floors, with more than three dwellings per floor. Placing a large number of households (as many as a small village in terms of population size) into one enormous apartment building (Figure 9, and see also Figures 3 and 6) may give rise to conditions that increase the occurrences of crime incidents.

In the areas where the Improvement Plans have been implemented with these high-rise buildings, the previous physical and social relationships established among the former squatter residents have been almost completely destroyed (Erman, 1997:95,105; Ayata, 1989:123,126). The residents used to live in organically developed neighborhoods of one-storey buildings in gardens, where many daily face-to-face and community relationships existed among the neighbors (Güne -Ayata, 1990/91:92-93; Erman, 1997:95-96; Ayata, 1989:104-106,110). However, now the residents need to adapt to a completely new lifestyle, where almost nobody knows or takes care of their neighbors due to the completely alienated, anonymous and isolated physical and social environments (Erman, 1997:96,97; Ayata, 1989:121,123) that have been created, with many newcomers in high-density building settlements, giving rise to a loss in the sense of community.

In addition to anonymity and alienation (Newman, 1973) , Newman's (1972) second criterion for increasing crime rates in any large residential building, which is the lack of surveillance of the semi-public interiors of the buildings, can be a concern in these apartment buildings. His (1972) third criterion, however, which is availability of escape routes in the buildings, by means of which offenders could easily escape from the incident scene after committing a crime incident, might be less relevant.

As a result, in this planning system the formation of spaces with special layouts and design features to facilitate the reproduction of the social and community relations that prevailed in some respects in the physical context of early stage *gecekondu* (squatter) developments, is not possible. In this regard, in current planning practices in Turkey the provision of areas of common use, such as parks and playgrounds, which

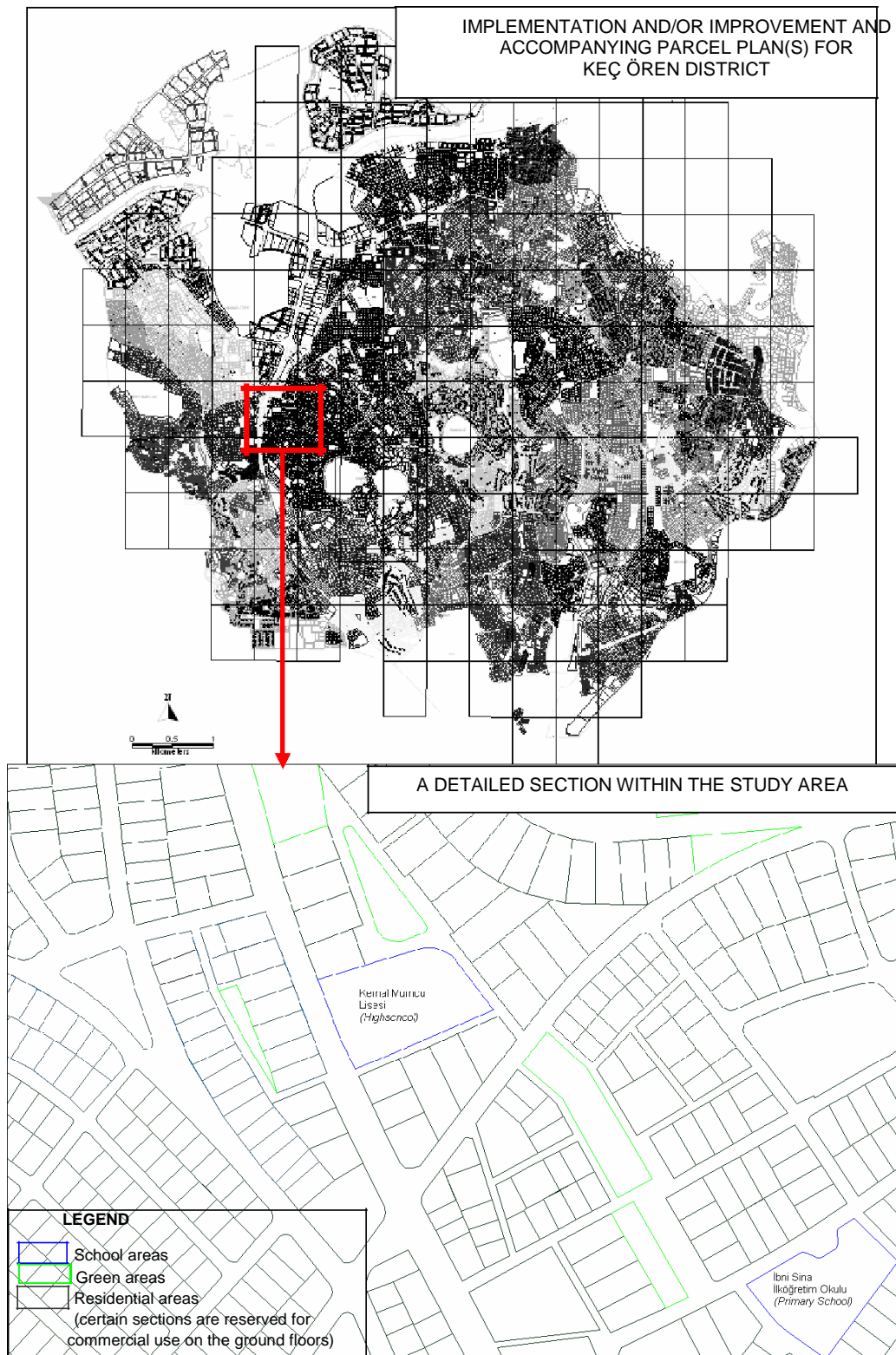


Figure 8. Implementation and/or Improvement and accompanying Parcel Plan(s) for the Keçiören District, and a detailed section within the study area. Note: In the zoomed plan some detail data and the textual information is lacked for clarity. Source: Erdo an, 2007: 180 based on information obtained from the Keçiören Municipality.



Figure 9. Examples of the transformation in the study area. Source: Erdo an, 2007: 181.

could be highly effective in recreating the former community and network relations, in many cases are randomly placed at the residual corners of residential blocks, and only because the space is insufficient for the construction of an apartment building (Figure 8). Therefore, the present planning system contributes to the current elevation in the number of occurrences of crime incidents in planned settlements due to its lack of a systematic approach in the formation of different levels of public and private spaces. In summary, the system far from encouraging the production of well-defined and differentiated spaces that are characterized by public, semi-public, semi-private and private elements.

IMPLICATIONS AND CONCLUSIONS FOR THE TURKISH PLANNING SYSTEM, INCLUDING IN-TRANSITION AREAS

In the following sections, urban planning and design implications and concrete strategies in the prevention/reduction of criminal activities are presented based on the main finding of the study, and in the light of the discussions made in the previous section.

How a new planning system should be and its relation to areas to be newly planned

In planning for the prevention of crime in the settlements that are to be newly developed, all of the negativities of the current planning system need to be taken into consideration, and the means must be made available to convert them into positive contexts in the manner earlier stated. In the first place, the planning of new settlements

or neighborhoods should include the creation of an urban identity and quality that would result in the generation of a “sense of community belonging and safety,” as Yuen (2004:5) argues. The construction of the urban fabric should also take into account the “needs, expectations and life styles of its residents” (Yuen, 2004:5) in creating their well-differentiated levels of public-private spaces with clearly defined functions (Guise, 2002). Community participation should always be an integral part of urban development and urban safety related activities to ensure success in their implementation.

Moreover, this new planning approach should also include an urban design component that allows the production of “unique” environments, which should establish not only meaningful relationships between the built-up and open spaces, but also a meaningful hierarchy of public, semi-public, semi-private and private spaces. Collectively, the careful and elaborative construction of the urban setting and its diversity of integrated land-use functions would be an eventual supporting factor in hindering or preventing the occurrences of criminal activity. This could be achieved through the creation of a total living environment (Yuen, 2004:6) in terms of the physical setting and spatial layouts of the neighborhoods, and would further promote the creation of social networks and community relations within them.

The effectiveness of an urban planning/design scheme in minimizing the opportunities for the occurrence of criminal acts in an urban area is directly related to the ability/capacity of that area to reproduce social and community relations that are in some respect similar to those that was once observed in the early stage *gecekond* (squatter) housing areas. This is a common

point in all planning for crime prevention literature, in which in some respect implies “the active trust” among the people who all know each other in the “informal” settlements that could not be completely reestablished in the new “formal” settlements. The reason for this is that the formal settlements are characterized by heterogeneous and high-density dwellings, containing new higher -income groups from other parts of the city, resulting in a decreasing proportion of former squatter residents. Such settlements require the establishment of “the passive trust” prevailing among people who do not know each other (Giddens, 1992; Giddens, 1994 in I lk and Pınarcıo lu, 2002:54-55). A solution to this problem may lie “in a consideration of new forms of organization that pay heed to the importance of the passive trust that is supported by the formal, and includes everyone, while at the same time considering the positive strengths of the active trust of the informal” (I lk and Pınarcıo lu, 2002:83)¹².

Therefore, the effectiveness of planning/designing out crime could be measured in terms of “the difference that space makes” (Sayer, 1985) in the establishment and development of a sense of community and a sense of belonging to, or feeling a part of, a community living specifically in that locality. Another method of measurement could be the extent to which a number of common place-based opportunity reduction or environmental crime prevention strategies such as “natural surveillance,” “natural access control” and “territorial reinforcement” (Oc and Tiesdell, 1997:55) can be achieved; as a feeling of belonging to a community and to feel the trust that prevails in that specific locality, accompanied by a certain level of proprietorship and responsibility over the public spaces, may have a reducing effect on the occurrences of criminal activities. Canin (1994) verifies this by stating that, “When the streets are perceived as a “no man’s land”, they are more inviting to trespassers and criminals” (Yuen, 2004:7).

In summary, resolutions for medium–large scale planning to make urban design compulsory in the prevention/reduction of crime incidents must:

- Provide unique layouts that consider place-based strategies, such as those of Crime Prevention through Environmental Design, Defensible Space;
- give a sense of placeness, so that its residents and users are encouraged to develop proprietorship and social surveillance over the public spaces;
- allow the functional use of the grounds of the buildings and the relationship of buildings to the surrounding area, including other buildings; and also should be well-defined and differentiated in terms of a systematic combination of public, semi-public, semi-private and private elements;
- compose a systematic network of open spaces that both satisfies the recreational needs and facilitates the

formation of community and social relationships, encounters, etc.

- reflect the particular and unique physical and social compositions of each individual setting, and should enable the (re)development of social interactions and networks;
- include the participation of the concerned community who will influence the structuring of its housing and/or living/working environment;
- include data, knowledge and experience from all key institutions, including police authorities, in each locality.

A comparison of these proposed challenges for the new planning system with the problems inherent in the current medium-large scale planning system in the environmental prevention of crime incidents is presented in Table 4.

Challenges for existing settlements

This section will focus upon what could be done in the planned areas of Turkish metropolises, which will in the future encompass the whole study area. The discussions made in previous sections should not imply that such social conditions could only be attained through the construction of low density, detached and semi-detached housing with courtyards and gardens. In fact, especially high-density urban redevelopment (transformation of *gecekondu* settlements and the former relatively low density planned settlements) in the metropolitan core and the periphery (I lk and Pınarcıo lu, 2002:164-165) by small-scale contractors to a lesser extent, by MHA in cooperation with municipalities to a larger extent; by new high-density developments in the satellite suburban areas by large scale companies (Eri en, 2003:108) and by the MHA have been indispensable components of Turkish urbanization since the 1980s.

To exemplify the accomplishment of low crime rates in densely populated settlements, Yuen (2004:1) stated that even though 86% of its population lives in high-rise (6,060 persons/km²) public housing, Singapore boasts the lowest crime rate in the world (The Straits Times, 31 March 2003). In focusing upon “the urban safety challenges and planning possibilities towards making safer cities,” she (2004:11) concludes that the success of Singapore “is not a spontaneous development but the result of a carefully crafted strategy involving investment in the physical environment – upgrading old housing, improving the living environment and constructing a useable past to build up the present basis for planning a distinctive and delightful city. Emphasis is on building “home” places and actively engaging the community in defining urban identity, managing their living areas and preventing crime”.

In the areas that are to be newly planned for high and low-density development it would be easier to integrate the environmental design principles for crime prevention, on the condition that a complete change in the urban

¹²This quotation is a translation made by the author, the original text is in Turkish.

Table 4. The problems of and resolutions for Turkish medium-large scale planning system.

Theme	Current Planning	Negative reflections in <i>planned</i> developments in inner metropolitan areas	How new planning should be
Creation of unique environments and urban design components, including place-based crime prevention design measures	No consideration of unique environments. Urban design – without any place-based consideration – is carried out for only very special (such as historic areas) and small localities.	No or lost urban identity. Formation of repetitive and monotonous inner metropolitan areas and cities all over the country.	Spaces must be produced with special layouts and design components, including consideration of CPTED, Defensible Space, Space Syntax, and Situational Crime Prevention strategies. Urban design must be compulsory and an essential part of the planning.
Development of a sense of placeness, sense of community and the establishment of proprietorship over public spaces	No consideration.	Settlements produced give no sense of placeness or community to its residents. Proprietorship is limited to the privately owned closed spaces, and almost all the time to the dwellings.	Spaces to be produced by the plan should provide a sense of placeness and of community to its residents and other users, so that all of them in time will develop proprietorship and social surveillance over the public spaces that they do not own.
Relationship of buildings with their immediate and farther environments, open-closed space relationships, public-private space definition	No consideration.	Repetitive and monotonous high-density apartment buildings which have no relationship with their environments and stand as independent entities from their surroundings, spaces produced with no definition of differentiating levels of public and private spaces.	The functional use of grounds and the relationship of a building to its surrounding area that may be shared with other buildings should be one of the basic considerations in planning. The design should enable the production of well-defined and differentiated spaces characterized by a systematic coordination of public, semi-public, semi-private, and private space elements.
Common use areas, such as open spaces like parks and playgrounds	Almost all the time located randomly at a residual and useless corner of a residential block, where the space is not large enough for the construction of a proper apartment building.	Most of the time unsystematic, narrowly thought, and useless bundle of open community spaces.	Design should include elaborate thinking towards a systematic network of open spaces that would enable not only the satisfaction of the recreational needs of the residents, but also the establishment of community and social relationships, encounters and gatherings in community spaces, meeting points, etc.
Reflection of all current and possible future conditions, including the residents' socio-economic status	Only limited to some decisive natural inputs or thresholds, like geology and topography, and to existing cadastral divisions that would influence the future share from development. Socio-economic aspects, most of the time, do not get past the stage of research reports, when such reports are prepared.	Existing social relations are destroyed. A uniform, unvarying, and undiversified urban spatial structure and lifestyle are imposed upon all current and future residents.	The plan/design of a new urban environment should take into account the unique physical and social compositions of each individual setting. It should enable the development or redevelopment of social interactions and networks.
Reflection of communities' needs and expectations, community participation	Almost no consideration. Participation is limited to a collection of complaints from affected residents after finishing and disclosure of the first complete draft plan.	The "complaints" – not the "expectations" – of the residents focus on rent-oriented interests in private ownership, such as those against public services placed on their property.	The community should influence the structuring of its housing and/or living/working environment through an effective participatory planning process.
Interdisciplinarity and reflection of knowledge and experience of key institutions	Almost no consideration. The reflections of key institutions are limited to those concerning physical thresholds and infrastructure.	Urban areas are produced through an isolated process, and thus far from addressing the realities and solutions to their unique problems.	The planning and design should effectively include the data, knowledge and experience of all the key institutions in each locality.

Source: Erdo an, 2007: 186.

Table 5. Measures taken against all kinds of kinds of larceny, burglary and theft incidents in nine neighborhoods of the Central Police Station in Keçiören District.

Measure taken	(n)	(%)
I have changed the my door and locks	80	54.4
I have barred my windows	16	10.9
I have bought a dog	8	5.4
I had a security system installed	21	14.3
I have bought a safe	6	4.1
"Site"* administration increased security	8	5.4
I have taken out insurance	8	5.4
Total	147	100.0

(*) In Turkish the word "site" means residential developments of middle- and higher-income groups, constructed mainly by housing cooperatives, large scale contractors and the MHA. Source: Erdo an, 2007: 188 based on information obtained from Da , 2004:76.

planning act and regulations is achieved. These acts and regulations must be restructured so that urban design and the accompanying Crime Prevention through Environmental Design (CPTED), Defensible Space and/or a part of Situational Crime Prevention (SCP) principles become compulsory. Nevertheless, in the areas to be redeveloped (transformed) into high-density settlements through the current Improvement Plans, or in the currently high-density planned settlements characterized by apartment buildings, the implementation of these principles is much more difficult. Even in the countries like the United States and Britain, "the use of defensible space ideas as a major design parameter, has not been a major feature of most house-building in recent times.... where problems of particular types of crime are.... tackled by 'retro-fitting' (adapting what already exists); this is by definition a constrained process which probably tends to emphasize target-hardening actions at the level of the individual property, simply because these are much easier to carry out than a major revision of the layout of the wider area which might entail a considerable amount of demolition" (Schneider and Kitchen, 2002:274).

Accordingly, in the older settlements, an SCP approach, that of "target hardening," could be the most preferable environmental response to prevent crime incidents and to deter offenders. These include the adoption of certain physical measures to individual properties, such as steering locks, anti-bandit screens, vandal-proofing and tamper-proof seals (Oc and Tiedsell, 1997:59). Such measures could easily be applied as one of the SCP strategies for "increasing the offenders' effort" in areas where a large number of crime incidents take place. In fact, these measures are currently being applied. In a research performed by Da (2004:74-78)

focusing on the crime problem and the public's view of the prevention of all kinds of larceny, burglary and theft, 163 (n = 163) citizens living in nine of the neighborhoods under the responsibility of the Central Police Station in the Keçiören District were surveyed¹³. Two survey questions concerning these stated measures and their types yielded the following results: 72.5% of respondents took individual measures against all kinds of larceny, burglary and theft. Out of these, 54.4% stated that they had changed their doors and locks, 14.3% had acquired a security system and 10.9% had barred their windows (Table 5).

Nevertheless, these measures have generally been criticized for their possible displacement effect on crime incidents and their inability to reduce the overall rates (Weisburd, 2002:199). The main means for the prevention of crime incidents in high-density urban developments should involve minor physical interventions that would reinforce the increase of social networks for both the development of a sense of "home," "community" or in general, "place," and proprietorship over public spaces to ensure "social surveillance" (Doeksen, 1997:243,246). Moreover, it should involve the reinforcement of social and community relations so that the community takes part collectively in activities against crime and offenders, and in improving their physical and social environment into a high quality, livable and safe habitat. Most environmental criminology scholars believe that the current evidence is not enough to support the idea of " 'design out crime' or 'plan out crime' ... but that place-based responses to crime problems are capable of 'making a difference' " (Schneider and Kitchen, 2002:280, 286).

Therefore, the reinforcement of community relations and local participation against criminal activities, alongside collective activities aimed at the improvement of the physical environment in a neighborhood, have an important and essential role in preventing and reducing crime. In this case, the creation of a sense of community and belonging in a place can be supported by social activities and initiatives and through the establishment of certain kinds of civil organizations by the members of that specific resident population (Yuen, 2004:7-8).

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¹³ Due to the many-to-many relationship between the Police Station and the neighborhood boundaries, the remaining section of one neighborhood that is partially covered in the study area (as part of Etlik Police Station Zone) is located in the Central Police Station Zone.

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REFERENCES

- Aguilera AV (2005). City of fear: The social control of urban space in Latin America. *Dialog* 87, A J. Planning, Building in the Third World, 4:25-30.
- Akpınar E (2005). Using geographic information systems in analyzing the pattern of crime incidents and the relationship between landuse and incidents. MS thesis, Middle East Technical University, Ankara, Türkiye.
- Akpınar EA (2006). Development of crime maps for the public order incidents in Eski ehir between 1999 and 2004 by the use of Geographic Information Systems. MS thesis, Anadolu University, Eski ehir, Türkiye. (In Turkish) Alston JD (1994). The serial rapist's spatial pattern of target selection. MA thesis, Simon Fraser University, Vancouver, Canada. <http://www.lib.umi.com/dissertations/fullcit/MM01030>, accessed on March 4, 2002.
- Altında B (2007). Gültepe (Çinçin) Mass Housing Project. <http://www.altindagbld.gov.tr/ALTINDAG.asp?Belediye=FaaliyetveProjeDetayla&ilgiNo=17>, accessed on October 15, 2007. (In Turkish)
- Ankara Chamber of Commerce (1998.) Ankara: From the past to the present. Ankara.
- Ayata S (1989). Squatter and apartment housing as a social environment, *J. Toplum ve Bilim*. 46(47):101-127. (In Turkish)
- Brantingham PJ, Brantingham PL (1981a). Introduction: The dimensions of crime. In: Brantingham PJ, Brantingham PL (eds) *Environmental Criminology*, Beverly Hills, CA: Sage Publications. pp. 7-26.
- Brantingham PJ, Brantingham PL (1984). *Patterns in Crime*. New York, NY: Macmillan.
- Brantingham PL, Brantingham PJ (1981b). Notes on the geometry of crime. In: Brantingham PJ, Brantingham PL (eds) *Environmental Criminology*, Beverly Hills, CA: Sage Publications, pp. 27-54.
- Brantingham PL, Brantingham PJ (1993). Environment, routine and situation: toward a pattern and rational choice. *Advances in Criminological Theory*, Vol 5, New Brunswick, NJ: Transaction Publications.
- Brantingham PL, Brantingham PJ (1998). Mapping crime for analytic purposes: location quotients, counts and rates. In: Weisburd D, McEwen T (eds) *Crime Mapping and Crime Prevention*. Crime Prevention Studies. Vol 8, Monsey, New York: Criminal Justice Press. pp. 263-288.
- Canin B (1994) Mastering crime in your planned community. Paper presented to Urban Land Institute. October.
- Canter D, Larkin P (1993). The environmental range of serial rapists, *J. Environ. Psychol.*, 13(1):63-69.
- Celik O (2010). Changing forms and strategies of state intervention with respect to the housing of the poor in Istanbul: The role of mass housing administration. In: Proceedings of First International Conference in Political Economy, held in Rethymno, Crete, Greece. http://www.iippe.org/wiki/Panel_on_Urban_and_Regional_Political_Economy, accessed on July 24, 2010.
- Clark GA (2001). Social disorganization theory. In: Bryant CD (chief ed.), Adler PA, Adler P, Jay C (assoc. eds.), *Encyclopedia of Criminology and Deviant Behavior*, Vol. I: Historical, Conceptual, and Theoretical Issues. USA: Brunner-Routledge, Taylor and Francis Group. pp. 370-373.
- Clarke RV (1980). Situational crime prevention: Theory and practice. *Br. J. Criminol.*, 20:137-147.
- Clarke RV (1992). (ed.) *Situational Crime Prevention: Successful Case Studies*. Albany, NY: Harrow and Heston.
- Clarke RV (1997). *Situational Crime Prevention: Successful Case Studies*. (Sec. edi.) Albany, NY: Harrow and Heston.
- Clinard MB, Meier RF (1998). *Sociology of Deviant Behavior*. (Tenth edi.) Fort Worth, TX: Harcourt Brace.
- Clontz KA (1995). Residential and commercial burglaries: An empirical test of crime prevention through environmental design (defensible space). PhD dissertation, Florida State University, Florida, USA. <http://www.lib.umi.com/dissertations/fullcit/9526744>, accessed on March 4, 2002.
- Cohen LE, Felson M (1979). Social change and crime rate trends: A routine activity approach. *Am. Sociol. Rev.*, 44(8):588-608.
- Cornish DB, Clarke RV (1986). *The Reasoning Criminal: Rational Choice Perspectives on Offending*. New York: Springer-Verlag.
- Crews GA (2001). Epidemiology of deviance. In: Bryant CD (chief ed.), Adler PA, Adler P, Jay C (assoc. eds.), *Encyclopedia of Criminology and Deviant Behavior*, Volume I: Historical, Conceptual, and Theoretical Issues. USA: Brunner-Routledge, Taylor and Francis Group, pp. 143-147.
- Crowe T (1991). *Crime Prevention through Environmental Design*. Boston, MA: Butterworth-Heinemann.
- Crowe T (2000). *Crime Prevention through Environmental Design*. (Sec. ed.) Boston, MA: Butterworth-Heinemann.
- Da H (2004). Crime problem and community perspective in prevention of burglaries, *J. Polis*. 10(42):74-78 (In Turkish).
- Deniz D (2007). Secure urban environments by design: Analysis of Konak square design through crime prevention through environmental design (CPTED) principles. PhD dissertation, zmir Institute of Technology, zmir, Türkiye.
- Doeksen H (1997). Reducing crime and fear of crime by reclaiming New Zealand's suburban street, *Landsc. Urban Plann.*, 39:243-252.
- Dunham RG, Wilson G (2001). Integrated theories of crime and deviance. In: Bryant CD (chief ed.), Adler PA, Adler P, Jay C (assoc. eds.), *Encyclopedia of Criminology and Deviant Behavior*, Volume I: Historical, Conceptual, and Theoretical Issues. USA: Brunner Routledge, Taylor and Francis Group, pp. 186-190.
- Duyar-Kienast U (2001). Aspects of the formation of gecekondu in Turkey: A case study from Ankara, *Dialog* 70. *J. Plann. Build. World*, 3: 23-29.
- Duzgun HS, Erdogan A (2003). A methodology for mapping and spatial analysis of auto theft and theft from auto incidents in the City of Konya. In: Proceedings of 3rd European Academy of Forensic Science Meeting held in Istanbul, Türkiye, *Forensic Sci. Int.*, 136(1):15-16.
- Ekinçi O (2008). Column from Cumhuriyet Newspaper dated May 12, 2008 with heading Humanity scandal in Sulukule. <http://arkitera.com.tr/h28629-sulukulede-insanlik-skandal.html> accessed on July 24, 2010 (In Turkish).
- Erdoğan A (2007). Exploring crime in a spatial and temporal context: Suitable response strategies for urban planning and policing by the case of Etilik Police Station Zone. PhD dissertation, Middle East Technical University, Ankara, Türkiye.
- Eri en O (2003). Suburbanization in Türkiye within the process of integration to global development and a new life-style settlement. PhD dissertation, Middle East Technical University, Ankara, Türkiye.
- Erkut G, Ocaççı M, Ünlü A (2001) Evaluation of crime profile in Istanbul metropolitan area, *Dialog* 70. *J. Plann. Build. World*, 3:30-33.
- Erman T (1997). Squatter (*gecekondu*) housing versus apartment housing: Turkish rural-to-urban migrant residents' perspectives, *Habitat Int.*, 21(1):91-106.
- Erman T (2001). The politics of gecekondu (squatter) studies in Turkey: The changing representations of rural migrants in the academic discourse. *Urban Stud.*, 38(7):983-1002.
- Erman T, Eken A (2004). The "Other of the Other" and "unregulated territories" in the urban periphery: gecekondu violence in the 2000s with a focus on the Eserler Case, *Istanbul, Cities*. 21(1):57-68 (html:1-16).

- Etöz Z (2000). *Outskirts: An invasion, a threat*, J. Birikim., 132:49-53. (In Turkish)
- Fanek MF (1997). *The use of space syntax methodology in predicting the distribution of crime in urban environments*. PhD dissertation, Texas Tech University, Texas, USA.
<http://wwwlib.umi.com/dissertations/fullcit/9736893>, accessed on March 4, 2002.
- Franck KA, Mostoller M (1995). *From courts to open spaces to streets: changes in the site design of US public housing*, J. Archit. Plann. Res., 12(3):186-220.
- Fritz NJ (2001). *Environmental criminology theory*. In: Bryant CD (chief ed.), Adler PA, Adler P, Jay C (assoc. eds.), *Encyclopedia of Criminology and Deviant Behavior, Volume I: Historical, Conceptual, and Theoretical Issues*. USA: Brunner-Routledge, Taylor and Francis Group. pp. 141-142.
- Giddens A (1992). *The Consequences of Modernity*. Stanford: Polity Press.
- Giddens A (1994). *Living in a post-traditional society*. In: Beck U (ed) *Reflexive Modernization*, Cambridge: Polity Press. pp. 66-110.
- Glaeser EL, Sacerdote B, Scheinkman JA (1996). *Crime and social interactions*. Q. J. Econ., 111(2):507-548.
- Glyde J (1856). *Localities of crime in Suffolk*. J. Stat. Society Lond., 19:102-106.
- Görgülü E (2006). *News from Hürriyet Newspaper dated May 4, 2006 with heading Pistol to the principal, knife to the teacher and marijuana to the student*.
<http://hurarsiv.hurriyet.com.tr/goster/haber.aspx?id=4358153> accessed on October 27, 2006. (In Turkish)
- Gül HN (2002). *Geographic Information Systems in enlightenment of burglaries: A pilot project in the province of Bursa*. MS thesis, stanbul University, stanbul, Türkiye (In Turkish).
- Güne -Ayata A (1990/91). *The identity problem in squatters, solidarity patterns and fellow citizenship*, J. Toplum ve Bilim., 51(52):89-101 (In Turkish)
- Gürel D (2006). *News from Hürriyet Newspaper dated October 16, 2006 with heading The Çiçin fear of taxi drivers*.
<http://hurarsiv.hurriyet.com.tr/goster/haber.aspx?id=5263427& tarih=2006-10-16> accessed on October 27, 2006 (In Turkish)
- Guery AM (1833). *Essay on moral statistics of France*. Paris: Crochard. (In French)
- Guise R (2002). *Case study of Hulme, Manchester*. In: Barton H (ed) *Sustainable Communities-The Potential for Eco-Neighbourhoods*, London: Earthscan Publications. pp. 141-146.
- Hair JF, Anderson RE, Tatham RL, Black WC (1998). *Multivariate Data Analysis*. (Fifth edi.) Upper Saddle River, NJ: Prentice Hall.
- Harries K (1999). *Mapping Crime: Principle and Practice*.
http://www.ncjrs.org/html/nij/mapping/ch1_14.html accessed on March 3, 2002.
- Henry LM, Bryan BA (2000). *Visualizing the spatio-temporal patterns of motor vehicle theft in Adelaide, South Australia*. In: *Proceedings of Conference on Crime Mapping: Adding Value to Crime Prevention and Control*, held in Adelaide, Australia.
<http://www.aic.gov.au/conferences/mapping/henry.pdf>, accessed on February 16, 2003.
- Henslin JM (1999). *Sociology: A Down-To-Earth Approach*. (Fourth edi.) Boston: Allyn and Bacon.
- Herbert DT (1982). *The Geography of Urban Crime*. New York, NY: Longman Group Ltd.
- Hillier B (1973). *In defence of space*. RIBA J., 11: 539-544.
- Hillier B (1977). *A State of Mind*. RIBA J., 5: 202.
- Hillier B, Hanson J, Peponis J, Hudson J, Burdett R (1983). *Space syntax: A different urban perspective*. *Architects' J.* 30 November. 178(48):47-64.
<http://wwwlib.umi.com/dissertations/fullcit/NN17083>, accessed on March 4, 2002.
- İlk O (1996). *The cities and urbanization in Turkey after 1980s*. In: *Encyclopedia of Republic Period*. stanbul: leti im Publications. 13: 782-801 (In Turkish).
- İlk O, Pınarcıo lu MM (2002). *Poverty In Turn: Case of Sultanbeyli*. (Sec. edi.) *Research-Analysis Series*, stanbul: leti im Publications (In Turkish).
- Jeffrey CR (1971). *Crime Prevention Through Environmental Design*. Beverly Hills, CA: Sage Publications.
- Jeffrey CR (1977). *Crime Prevention through Environmental Design* (Sec. edi.) Beverly Hills, CA: Sage Publications.
- Jensen G (2001). *Etiology of deviance*. In: Bryant CD (chief ed.), Adler PA, Adler P, Jay C (assoc. eds.), *Encyclopedia of Criminology and Deviant Behavior, Volume I: Historical, Conceptual, and Theoretical Issues*. USA: Brunner-Routledge, Taylor and Francis Group. pp. 153-157.
- Jones E (1970). *Towns and Cities*. (Sec. ed.), London: Oxford University Press. p. 138.
- Kaplan EA (1980). *Problem of criminality in urbanizing society and the police organization*. MS thesis, Graduate program in Public Administration, TODA E, Ankara, Türkiye (In Turkish).
- Kinney JB (1999). *A spatial analysis of calls for police service and bar locations in downtown Vancouver (British Columbia)*. MA thesis, Simon Fraser University, Vancouver, Canada.
<http://wwwlib.umi.com/dissertations/fullcit/MQ51378>, accessed on March 4, 2002.
- Kıray MB (1992). *Development of modern cities and certain trends peculiar to Turkey*. In: *Toplum Bilim Essays, 7*. Ankara: G.Ü. Publications. p. 265-273. (In Turkish).
- Leitner M (1999). *First and second order properties of spatial point patterns: The application of crime data from Baton Rouge, LA*. In: *Proceedings of 4th International Conference on GeoComputation*, held in Virginia, USA.
http://www.geovista.psu.edu/sites/geocomp99/files/geocomp99_program.pdf, accessed on June 6, 2002.
- McNulty TL (2001). *Social ecology theory*. In: Bryant CD (chief ed.), Adler PA, Adler P, Jay C (assoc. eds.), *Encyclopedia of Criminology and Deviant Behavior, Volume I: Historical, Conceptual, and Theoretical Issues*. USA: Brunner-Routledge, Taylor and Francis Group. p. 374-377.
- Miethe TD (2001). *Ecology of crime*. In: Bryant CD (chief ed.), Luckenbill D, Pek D (assoc. eds.), *Encyclopedia of Criminology and Deviant Behavior, Volume II: Crime and Juvenile Delinquency*. USA: Brunner-Routledge, Taylor and Francis Group. pp. 203-205.
- Nelson AL, Bromley RDF, Thomas CJ (1996). *The geography of shoplifting in a British city: Evidence from Cardiff*, *Geoforum*. 27(3): 409-423.
- Newman O (1972). *Defensible Space: People and Design in the Violent City*. London: Architectural Press and New York, NY: McGraw-Hill and Macmillan.
- Newman O (1973). *Defensible Space: People and Design in the Violent City*. (Sec. edi.) London: Architectural Press.
- Oc T, Tiesdell S (1997) *Safer City Centres: Reviving the Public Realm* (eds). London: Paul Chapman.
- Öncü A (1997b). *The myth of the ideal home: Travels across cultural borders to Istanbul*. In: Öncü A, Weyland P (eds.) *Space, Power and Culture*. Zed Publications. p. 56-72.
- Osmay S, Duruöz CN (1995). (comp.) *Urban Sociology and Urbanization Selected Readings*. Ankara: METU Faculty of Architecture Offset Printing Studio.
- Pallant J (2001). *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS for Windows (Versions 10.0 and 11.0)*. Open University Press. p. 136-137, 145, 173.
- Park RE (1969/1916). *The city: Suggestion for investigation of human behavior in the urban environment*. In: Sennet R (ed.) *Classic Essays on the Culture of Cities*. (Reprint), New York: Appleton-Century-Crofts.
- Park RE, Burgess EW, MacKenzie RD (1925/1928). *The City*. Chicago, IL: University of Chicago Press. p. 1-239.
- Peel CPTED Committee (1994). *Crime Prevention Through Environmental Design Principles*. Peel, Ontario: Region of Peel/City of Brampton/Corporation of the Town of Caledon; Mississauga/Peel Regional Police/Ontario Provincial Police.
- Peyroux E (2005). *"Sorting society through gates" A controversial form of crime prevention in post-apartheid Johannesburg*, *Trialog* 87. J. Plann. Build.World, 4: 31-35.
- Quetelet A [1831](1984). *Research on the Propensity for Crime at Different Ages*. Translated by Sawyer F. Sylveski. Cincinnati, OH:

- Anderson.
- Quimet M (2000). Aggregation bias in ecological research: How social disorganization and criminal opportunities shape the spatial distribution of juvenile delinquency in Montreal. *Can. J. Criminol.* 42(2): 135-156.
- Ratcliffe JH (2001). Residential burglars and urban barriers: A quantitative spatial study of the impact of Canberra's unique geography on residential burglary offenders. Final Report for the Criminology Research Council Grant, CRC 17/00-01.
- Robinson DM (2001). Routine activity theory: The commentator's perspective. In: Bryant CD (chief ed.), Adler PA, Adler P, Jay C (assoc. eds.), *Encyclopedia of Criminology and Deviant Behavior*, Volume I: Historical, Conceptual, and Theoretical Issues. USA: Brunner-Routledge, Taylor and Francis Group. pp. 335-339.
- Rossmo DK (1995). Geographic profiling: Target patterns of serial murderers. PhD dissertation, Simon Fraser University, Vancouver, Canada.
- Sayer A (1985). The difference that space makes. In: Gregory D, Urry J (eds) *Social Relations and Spatial Structures*, London: Macmillan. pp. 49-66.
- Sayın F (1998). Socio-economic analysis of predatory incidents in Istanbul between 1993 and 1997. MS thesis, Marmara University, Istanbul, Türkiye (In Turkish)
- Schneider RH, Kitchen T (2002). *Planning for Crime Prevention: A Transatlantic Perspective*. London, USA, Canada: Routledge, Taylor and Francis Group.
- Schumacher BJ, Leitner M (1999). Spatial crime displacement resulting from large-scale urban renewal programs in the City of Baltimore, MD: A GIS modelling approach, In: Proceedings of 4th International Conference on GeoComputation, held in Virginia, USA. http://www.geovista.psu.edu/sites/geocomp99/Gc99/047/gc_047.htm, accessed on May 23, 2002.
- Schwab WA (1992) *Theories of the city*. In: *The Sociology*, New York: Prentice Hall. pp. 1-34.
- ener M (1994). The impacts of socio-economic structure in the squatter settlements of metropolises on crime phenomenon. (An approach for Konak District in zmir Metropolitan Area), MS thesis in Public Administration, Dokuz Eylül University, zmir, Türkiye. (In Turkish).
- enyapılı T (1995). Name of the Problem is not Gecekondu, to be published in Utrecht University.
- Shaw CR, McKay HD (1942). *Juvenile Delinquency and Urban Areas*. Chicago. (Rev. ed. 1969) IL: University of Chicago Press. pp. 1-394.
- Sherman LW, Gartin PR, Buerger ME (1989). Hot spots of predatory crime: Routine activities and the criminology of place. *Criminol.* 27(1): 24-56.
- Stangeland P (2003). Catching a serial rapist: Hits and pitfalls in criminal profiling. In: Proceedings of 3rd European Academy of Forensic Science Meeting held in Istanbul, Türkiye, *Forensic Sci. Int.* 136(1): 14-15.
- Stevens J (1996). *Applied Multivariate Statistics for the Social Sciences*. (Third edi.) Mahway, New Jersey: Lawrence Erlbaum.
- Sui DZ (1998). GIS-based urban modelling: Practices, problems, and prospects. *Int. J. GIS*, 12(7):651-671.
- Sutherland EH (1940). White collar criminality. *Am. Sociol. Rev.*, 5:1-12.
- Sweet SP (1996). A study of the effects of public transportation on crime: From the metro to the mall. PhD dissertation, University of Maryland College Park, Maryland, USA. <http://wwwlib.umi.com/dissertations/fullcit/9707669>, accessed on March 4, 2002.
- Tabachnick BG, Fidell LS (1996). *Using Multivariate Statistics*. (Third edi.) New York: HarperCollins.
- Tekeli (1987/1991). Is a transition being experienced in Turkey from cities of the speculation of large capital to the cities of the speculation of small capital. In: *Urban Planning Colloquium*. Ankara: TMMOB Chamber of Architects Publications. pp. 166-169 (In Turkish).
- The Crime Mapping Laboratory Police Foundation (2000). *Geocoding in law enforcement: Final report*. Washington DC: U.S. Department of Justice, Office of Community Oriented Policing Services. <http://www.cops.usdoj.gov/files/ric/CDROMs/TechDocs/CrimeMapping/GeocodingLawEnforcementFinalReport.pdf>, accessed on September 20, 2007.
- Ünlü A, Alkırer Y, Edgü E (2000). Evaluation of crime phenomenon in Beyo lu in the context of physical and socio-cultural change. Istanbul Technical University Research Fund Project, Project no:1094. (In Turkish).
- U ur N (1986). Crime and criminality in squatters (case of Ankara). MS thesis, Gazi University, Ankara, Türkiye. (In Turkish).
- Weisburd D (2002). From criminals to criminal Contexts: Reorienting crime prevention research and policy. In Waring E, Weisburd D (eds) *Crime and Social Organization. Advances in Criminological Theory*. Vol 10, New Brunswick and London: Transaction Publishers. pp. 197-216.
- Whitt HP (2001). The moral statisticians. In: Bryant CD (chief ed.), Adler PA, Adler P, Jay C (assoc. eds.), *Encyclopedia of Criminology and Deviant Behavior*, Vol. I: Historical, Conceptual, and Theoretical Issues. USA: Brunner-Routledge, Taylor and Francis Group. pp. 229-232.
- Wilson JQ, Kelling GL (1982). Broken windows. *The Atlantic Monthly*. 211(3): 29-38.
- Wu T (2001). Analysing crime spatial patterns using remote sensing and geographical information system technologies: Investigating the urban opportunity structure model of Jackson, Mississippi. PhD dissertation, Louisiana State University, Louisiana, USA.
- Yuen B (2004). Safety and dwelling in Singapore, *Cities*. 21(1): 19-28 (html 1-16).
- Zürcher EJ (1995). *History of Modernizing Turkey*. (Third edi.) History-Politics Series, 7, Istanbul: İletişim Publications. (In Turkish).